
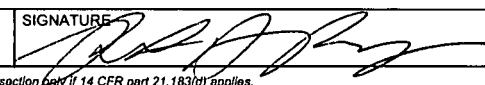
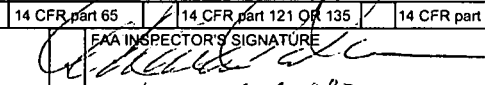



FAA FORM 8130-6, APPLICATION FOR U.S. AIRWORTHINESS CERTIFICATE

Form Approved O.M.B. No. 2120-0018
12/31/2010

 U.S. Department of Transportation Federal Aviation Administration		APPLICATION FOR U.S. AIRWORTHINESS CERTIFICATE		INSTRUCTIONS - Print or type. Do not write in shaded areas; these are for FAA use only. Submit original only to an authorized FAA Representative. If additional space is required, use attachment. For special flight permits complete Sections II, VI and VII as applicable.			
I. AIRCRAFT DESIGNATION	1. REGISTRATION MARK	2. AIRCRAFT BUILDER'S NAME (Make)	3. AIRCRAFT MODEL DESIGNATION	4. YR. MFR.	FAA CODING		
	N2554V	Defense Technologies, Inc.	Kestrel-T	2008			
	5. AIRCRAFT SERIAL NO.	6. ENGINE BUILDER'S NAME (Make)	7. ENGINE MODEL DESIGNATION				
	003	RCS	180				
	8. NUMBER OF ENGINES	9. PROPELLER BUILDER'S NAME (Make)	10. PROPELLER MODEL DESIGNATION	11. AIRCRAFT IS (Check if applicable)			
	1	Bambula	20"x8", 20"x10"	IMPORT			
APPLICATION IS HEREBY MADE FOR: (Check applicable items)							
A 1 <input type="checkbox"/> STANDARD AIRWORTHINESS CERTIFICATE (Indicate Category) <input type="checkbox"/> NORMAL <input type="checkbox"/> UTILITY <input type="checkbox"/> ACROBATIC <input type="checkbox"/> TRANSPORT <input type="checkbox"/> COMMUTER <input type="checkbox"/> BALLOON <input type="checkbox"/> OTHER							
B <input checked="" type="checkbox"/> SPECIAL AIRWORTHINESS CERTIFICATE (Check appropriate items)							
7 PRIMARY							
9 LIGHT-SPORT (Indicate Class) <input type="checkbox"/> AIRPLANE <input type="checkbox"/> POWER-PARACHUTE <input type="checkbox"/> WEIGHT-SHIFT-CONTROL <input type="checkbox"/> GLIDER <input type="checkbox"/> LIGHTER THAN AIR							
2 LIMITED							
5 PROVISIONAL (Indicate Class) 1 CLASS I 2 CLASS II							
3 RESTRICTED (Indicate operation(s) to be conducted) 1 AGRICULTURE AND PEST CONTROL 2 AERIAL SURVEY 3 AERIAL ADVERTISING 4 FOREST (Wildlife Conservation) 5 PATROLLING 6 WEATHER CONTROL 0 OTHER (Specify)							
4 <input checked="" type="checkbox"/> EXPERIMENTAL (Indicate operation(s) to be conducted) 1 <input checked="" type="checkbox"/> RESEARCH AND DEVELOPMENT 2 AMATEUR BUILT 3 EXHIBITION 4 AIR RACING 5 <input checked="" type="checkbox"/> CREW TRAINING 6 <input checked="" type="checkbox"/> MARKET SURVEY 0 TO SHOW COMPLIANCE WITH THE CFR 7 OPERATING (Primary Category) KIT BUILT AIRCRAFT							
8 SPECIAL FLIGHT PERMIT (Indicate operation(s) to be conducted, then complete Section VI or VII as applicable on reverse side) 8A Existing Aircraft without an airworthiness certificate & do not meet § 103.1 8B Operating Light-Sport Kit-Built 8C Operating light-sport previously issued special light-sport category airworthiness certificate under § 21.190							
1 FERRY FLIGHT FOR REPAIRS, ALTERATIONS, MAINTENANCE, OR STORAGE							
2 EVACUATION FROM AREA OF IMPENDING DANGER							
3 OPERATION IN EXCESS OF MAXIMUM CERTIFICATED TAKE-OFF WEIGHT							
4 DELIVERING OR EXPORTING 5 PRODUCTION FLIGHT TESTING							
6 CUSTOMER DEMONSTRATION FLIGHTS							
C 6 MULTIPLE AIRWORTHINESS CERTIFICATE (check ABOVE "Restricted Operation" and "Standard" or "Limited" as applicable)							
A. REGISTERED OWNER (As shown on certificate of aircraft registration) IF DEALER, CHECK HERE							
NAME Defense Technologies, Inc.				ADDRESS 2179 N Shangri-La Drive, Ste C Lexington PARK, MD. 20653			
B. AIRCRAFT CERTIFICATION BASIS (Check applicable blocks and complete items as indicated)							
AIRCRAFT SPECIFICATION OR TYPE CERTIFICATE DATA SHEET (Give No. and Revision No.) N/A				<input checked="" type="checkbox"/> AIRWORTHINESS DIRECTIVES (Check if all applicable AD's are complied with and give the number of the last AD SUPPLEMENT available in the biweekly series as of the date of application) B1-WEEKLY 2011-01			
AIRCRAFT LISTING (Give page number(s)) N/A				SUPPLEMENTAL TYPE CERTIFICATE (List number of each STC incorporated) N/A			
C. AIRCRAFT OPERATION AND MAINTENANCE RECORDS							
<input checked="" type="checkbox"/> CHECK IF RECORDS IN COMPLIANCE WITH 14 CFR Section 91.417				TOTAL AIRFRAME HOURS 15.65		3 EXPERIMENTAL ONLY (Enter hours flown since last certificate issued or renewed) 0	
D. CERTIFICATION - I hereby certify that I am the registered owner (or his agent) of the aircraft described above, that the aircraft is registered with the Federal Aviation Administration in accordance with Title 49 of the United States Code 44101 et seq. and applicable Federal Aviation Regulations, and that the aircraft has been inspected and is airworthy and eligible for the airworthiness certificate requested.							
DATE OF APPLICATION January 7, 2011		NAME AND TITLE (Print or type) Robert A Bryner Director of Engineering			SIGNATURE 		
A. THE AIRCRAFT DESCRIBED ABOVE HAS BEEN INSPECTED AND FOUND AIRWORTHY BY: (Complete the section only if 14 CFR part 21.183(d) applies.)							
2 14 CFR part 121 CERTIFICATE HOLDER (Give Certificate No.)		3 CERTIFICATED MECHANIC (Give Certificate No.)		6 CERTIFICATED REPAIR STATION (Give Certificate No.)			
5 AIRCRAFT MANUFACTURER (Give name or firm)							
DATE		TITLE			SIGNATURE		
(Check ALL applicable block items A and B)							
A. I find that the aircraft described in Section I or VII meets requirements for				4 THE CERTIFICATE REQUESTED AMENDMENT OR MODIFICATION OF CURRENT AIRWORTHINESS CERTIFICATE			
B. Inspection for a special permit under Section VII was conducted by:				FAA INSPECTOR FAA DESIGNEE 14 CFR part 65 14 CFR part 121 OR 135 14 CFR part 145			
DATE 1/7/2011		MIDO/FSDO Office ANC MIDO-44		DESIGNEE'S SIGNATURE AND NO. 4		FAA INSPECTOR'S SIGNATURE  HENRY K. COOPER	

VI. PRODUCTION FLIGHT TESTING	A. MANUFACTURER				
	NAME		ADDRESS		
	B. PRODUCTION BASIS <i>(Check applicable item)</i>				
			PRODUCTION CERTIFICATE <i>(Give production certificate number)</i> _____		
			TYPE CERTIFICATE ONLY		
		APPROVED PRODUCTION INSPECTION SYSTEM			
C. GIVE QUANTITY OF CERTIFICATES REQUIRED FOR OPERATING NEEDS					
	DATE OF APPLICATION	NAME AND TITLE <i>(Print or Type)</i>		SIGNATURE	
VII. SPECIAL FLIGHT PERMIT PURPOSES OTHER THAN PRODUCTION FLIGHT TEST	A. DESCRIPTION OF AIRCRAFT				
	REGISTERED OWNER		ADDRESS		
	BUILDER <i>(Make)</i>		MODEL		
	SERIAL NUMBER		REGISTRATION MARK		
	B. DESCRIPTION OF FLIGHT CUSTOMER DEMONSTRATION FLIGHTS <input type="checkbox"/> <i>(Check if applicable)</i>				
	FROM		TO		
	VIA		DEPARTURE DATE	DURATION	
	C. CREW REQUIRED TO OPERATE THE AIRCRAFT AND ITS EQUIPMENT				
		PILOT	CO-PILOT	FLIGHT ENGINEER	OTHER <i>(Specify)</i>
	D. THE AIRCRAFT DOES NOT MEET THE APPLICABLE AIRWORTHINESS REQUIREMENTS AS FOLLOWS:				
	E. THE FOLLOWING RESTRICTIONS ARE CONSIDERED NECESSARY FOR SAFE OPERATION: <i>(Use attachment if necessary)</i>				
	F. CERTIFICATION – I hereby certify that I am the registered owner (or his agent) of the aircraft described above; that the aircraft is registered with the Federal Aviation Administration in accordance with Title 49 of the United States Code 44101 <u>et seq.</u> and applicable Federal Aviation Regulations; and that the aircraft has been inspected and is safe for the flight described.				
	DATE	NAME AND TITLE <i>(Print or Type)</i>		SIGNATURE	
VIII. AIRWORTHINESS DOCUMENTATION (FAA DESIGNEE use only)	<input checked="" type="checkbox"/>	A. Operating Limitations and Markings in Compliance with 14 CFR Section 91.9, as applicable.		G. Statement of Conformity, FAA Form 8130-9 <i>(Attach when required)</i>	
	<input checked="" type="checkbox"/>	B. Current Operating Limitations Attached		H. Foreign Airworthiness Certification for Import Aircraft <i>(Attach when required)</i>	
	<input checked="" type="checkbox"/>	C. Data, Drawings, Photographs, etc. <i>(Attach when required)</i>		I. Previous Airworthiness Certificate Issued in Accordance with 14 CFR Section <u>21.191 a, c, f.</u> CAR _____ <i>(Original Attached)</i>	
	<input checked="" type="checkbox"/>	D. Current Weight and Balance information Available in Aircraft		J. Current Airworthiness Certificate Issued in Accordance with 14 CFR Section <u>21.191 a, c, f.</u> _____ <i>(Copy Attached)</i>	
	<input checked="" type="checkbox"/>	E. Major Repair and Alteration, FAA Form 337 <i>(Attach when required)</i>		K. Light-Sport Aircraft Statement of Compliance, FAA Form 8130-15 <i>(Attach when required)</i>	
	<input checked="" type="checkbox"/>	F. This Inspection Recorded in Aircraft Records			

UNITED STATES OF AMERICA
DEPARTMENT OF TRANSPORTATION - FEDERAL AVIATION ADMINISTRATION
SPECIAL AIRWORTHINESS CERTIFICATE

A	CATEGORY/DESIGNATION EXPERIMENTAL	
	PURPOSE Research & Development, Market Survey, Crew Tng.	
B	MANU-FACTURER	NAME N/A
		ADDRESS N/A
C	FLIGHT	FROM N/A
		TO N/A
D	N- 2554V	SERIAL NO. 003
	BUILDER Defense Technologies, Inc.	MODEL Kestral - T
E	DATE OF ISSUANCE January 7, 2011 EXPIRY January 6, 2012	
	OPERATING LIMITATIONS DATED 01/07/2011 ARE PART OF THIS CERTIFICATE	
	SIGNATURE OF FAA REPRESENTATIVE  Henry K. Cooper	DESIGNATION OR OFFICE NO. ANE-MIDO-44

Any alteration, reproduction or misuse of this certificate may be punishable by a fine not exceeding \$1,000 or imprisonment not exceeding 3 years, or both. THIS CERTIFICATE MUST BE DISPLAYED IN THE AIRCRAFT IN ACCORDANCE WITH APPLICABLE TITLE 14, CODE OF FEDERAL REGULATIONS (CFR).

A	This airworthiness certificate is issued under the authority of Public Law 104-6, 49 United States Code (USC) 44704 and Title 14 Code of Federal Regulations (CFR).
B	The airworthiness certificate authorizes the manufacturer named on the reverse side to conduct production flight tests, and only production flight tests, of aircraft registered in his name. No person may conduct production flight tests under this certificate: (1) Carrying persons or property for compensation or hire; and/or (2) Carrying persons not essential to the purpose of the flight.
C	This airworthiness certificate authorizes the flight specified on the reverse side for the purpose shown in Block A.
D	This airworthiness certificate certifies that as of the date of issuance, the aircraft to which issued has been inspected and found to meet the requirements of the applicable CFR. The aircraft does not meet the requirements of the applicable comprehensive and detailed airworthiness code as provided by Annex 8 to the Convention On International Civil Aviation. No person may operate the aircraft described on the reverse side: (1) except in accordance with the applicable CFR and in accordance with conditions and limitations which may be prescribed by the Administrator as part of this certificate; (2) over any foreign country without the special permission of that country.
E	Unless sooner surrendered, suspended, or revoked, this airworthiness certificate is effective for the duration and under the conditions prescribed in 14 CFR, Part 21, Section 21.181 or 21.217.

UNITED STATES OF AMERICA
DEPARTMENT OF TRANSPORTATION - FEDERAL AVIATION ADMINISTRATION

SPECIAL AIRWORTHINESS CERTIFICATE

CANCELLED

A	CATEGORY/DESIGNATION EXPERIMENTAL	
	PURPOSE Research & Development, Market Survey, Crew Tng.	
B	MANUFACTURER	NAME N/A
		ADDRESS N/A
C	FLIGHT	FROM N/A
		TO N/A
D	N-2554V	SERIAL NO. 003
	BUILDER Defense Technologies, Inc.	MODEL KestrAL - T
E	DATE OF ISSUANCE January 7, 2010	EXPIRY January 6, 2011
	OPERATING LIMITATIONS DATED 01/07/10 ARE PART OF THIS CERTIFICATE	
	SIGNATURE OF FAA REPRESENTATIVE Henry K. Cooper	DESIGNATION OR OFFICE NO. ANE-MIDO-44

COPY

Any alteration, reproduction or misuse of this certificate may be punishable by a fine not exceeding \$1,000 or imprisonment not exceeding 3 years, or both. THIS CERTIFICATE MUST BE DISPLAYED IN THE AIRCRAFT IN ACCORDANCE WITH APPLICABLE TITLE 14, CODE OF FEDERAL REGULATIONS (CFR).

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E	Unless sooner surrendered, suspended, or revoked, this airworthiness certificate is effective for the duration and under the conditions prescribed in 14 CFR, Part 21, Section 21.181 or 21.217.



New Cumberland Manufacturing Inspection District Office
Bldg. 201, Rm. 102,
400 Airport Road
New Cumberland, PA 17070-3419

Operating Limitations
Experimental: Research and Development, Market Survey,
and/or Crew Training

Registered Owner Name: Defense Technologies, Inc.	Year Manufactured: 2006
Registered Owner Address: 21795 Shangri-La Dr Lexington Park Maryland 20653	Aircraft Serial Number: 003
Aircraft Description: Kestrel-T: Giant Scale Rc Size Standard Wing And Tail Configuration Tricycle Gear Configuration	Aircraft Model Designation: Kestrel – T
Aircraft Registration: N2554V	Engine: RCS 180
Aircraft Builder: Defense Technologies, Inc.	Propeller: Bambula 20 x 8 wood

The following conditions and limitations apply to all unmanned aircraft system (UAS) flight operations for the Kestrel – T, RCS 180 while operating in the National Airspace System (NAS).

1. General Information.

a. Integrated system. For the purposes of this special airworthiness certificate and operating limitations, the Kestrel – T, RCS 180 operated by Defense Technologies, Inc., is considered to be an integrated system. The system is composed of the following:

- (1) Kestrel – T, RCS 180, serial number 003,
- (2) UAS control station(s), that is, fixed, mobile, ground-based, or airborne.
- (3) Telemetry, launch, and recovery equipment.

(4) Communications and navigation equipment, including ground and/or airborne equipment used for command and control of the Kestrel – T, RCS 180.

(5) Ground or airborne equipment used for communication with the chase aircraft, other members of the flight crew, observers, air traffic control (ATC), and other users of the NAS.

b. Compliance with 14 CFR part 61 (Certification: Pilots, Flight Instructors, and Ground Instructors) and part 91 (General Operating and Flight Rules). Unless otherwise specified in this document, the UA pilot-in-command (PIC) and Defense Technologies, Inc., must comply with all applicable sections and parts of 14 CFR including, but not limited to, parts 61 and 91.

c. Operational requirements.

(1) No person may operate this UAS for other than the purpose of research and development, market survey, and/or crew training, to accomplish the flight operation outlined in Defense Technologies, Inc., program letter dated 01/07/2011, Rev. 2.6, which describes compliance with § 21.193(d), Experimental certificates: General, and has been made available to the UA PIC.

(2) This UAS must be operated in accordance with applicable air traffic and general operating rules of part 91 and all additional limitations herein prescribed under the provisions of § 91.319(i), Aircraft having experimental certificates: Operating limitations.

(3) Defense Technologies, Inc., must accumulate at least 50 flight hours under its experimental airworthiness certificate before customer crew training is permitted, in accordance with § 21.195(d), Experimental certificates: Aircraft to be used for market surveys, sales demonstrations, and customer crew training.

d. UA condition. The UA PIC must determine that the UA is in a condition for safe operation, and in a configuration appropriate for the purpose of the intended flight.

e. Multiple-purpose operations. When changing between operating purposes of a multiple purpose certificate, the operator must determine that the aircraft is in a condition for safe operation and appropriate for the purpose intended. A record entry will be made by an appropriately rated person (that is, an individual authorized by the applicant and acceptable to the FAA) to document that finding in the maintenance records.

f. Operation exceptions. No person may operate this UA to carry property for compensation or hire (§ 91.319(a)(2)).

g. UA markings.

(1) This UA must be marked with its U.S. registration number in accordance with part 45 or alternative marking approval issued by the FAA Production and Airworthiness Division, AIR-200.

(2) This UA must display the word *Experimental* in accordance with § 45.23(b), Display of marks, unless otherwise granted an exemption from this requirement.

h. Required documentation. Before conducting the initial flight of the Kestrel – T, RCS 180, Defense Technologies, Inc., must forward a copy of the Kestrel – T, RCS 180 program letter, special airworthiness certificate, and operating limitations to the following personnel:

(1) Peter Acevedo, FAA Air Traffic Representative, Eastern Service Center, System Support, 1701 Columbia Ave, College Park, GA 30337, telephone (404) 305-5598, email peter.k.acevedo@faa.gov.

(2) Richard Posey, Aviation Safety Inspector, Production and Airworthiness Division, AIR-200, 800 Independence Ave, SW, Washington, DC 20591, telephone (202) 267-9538, email richard.posey@faa.gov.

i. Change in registrant address. Section 47.45, Change of address, requires that the FAA Aircraft Registry be notified within 30 days of any change in the aircraft registrant's address. Such notification is to be made by providing AC Form 8050-1, Aircraft Registration Application, to the FAA Aircraft Registration Branch (AFS-750) in Oklahoma City, Oklahoma.

j. Certificate display and manual availability. The airworthiness and registration certificates must be displayed, and the aircraft flight manual must be available to the pilot, as prescribed by the applicable sections of 14 CFR, or as prescribed by an exemption granted in accordance with 14 CFR part 11, Investigative and Enforcement Procedures, to Defense Technologies, Inc.

2. Program Letter. The Kestrel – T, RCS 180 program letter, dated 01/07/2011, Rev.2.6, will be used as a basis for determining the operating limitations prescribed in this document. All flight operations must be conducted in accordance with the provisions of this document.

3. Initial Flight Testing.

a. Requirements. Flight operations must be conducted within visual line of sight of the pilot/observer. Initial flight testing must be completed upon accumulation of 25 flight hours. Following satisfactory completion of initial flight testing, the operations manager or chief pilot must certify in the records that the aircraft has been shown to comply with § 91.319(b). Compliance with § 91.319(b) must be recorded in the aircraft records with the following, or a similarly worded, statement:

I certify that the prescribed flight test hours have been completed and the aircraft is controllable throughout its normal range of speeds and throughout all maneuvers to be executed, has no hazardous operating characteristics or design features, and is safe for operation. The following aircraft operating data has been demonstrated during the flight testing: speeds Vx _____, and Vy _____, and the weight _____ and CG location _____ at which they were obtained.

b. Aircraft operations for the purpose of market surveys, sales demonstrations, and customer crew training. These operations cannot be performed until 50 flight hours have been accomplished. An entry in the maintenance records is required as evidence of compliance.

4. Authorized Flight Operations Area.

a. **Description of the authorized flight operations area.** The flight operations area is located in Clements, MD. Clements Field, 4MD4 is a private airport located at:

Latitude 38° 20.408N
Longitude 76° 44.432W

b. **Flight test area.** The flight operations area authorized for the UA will be referred to as the flight test area, and is depicted graphically below.

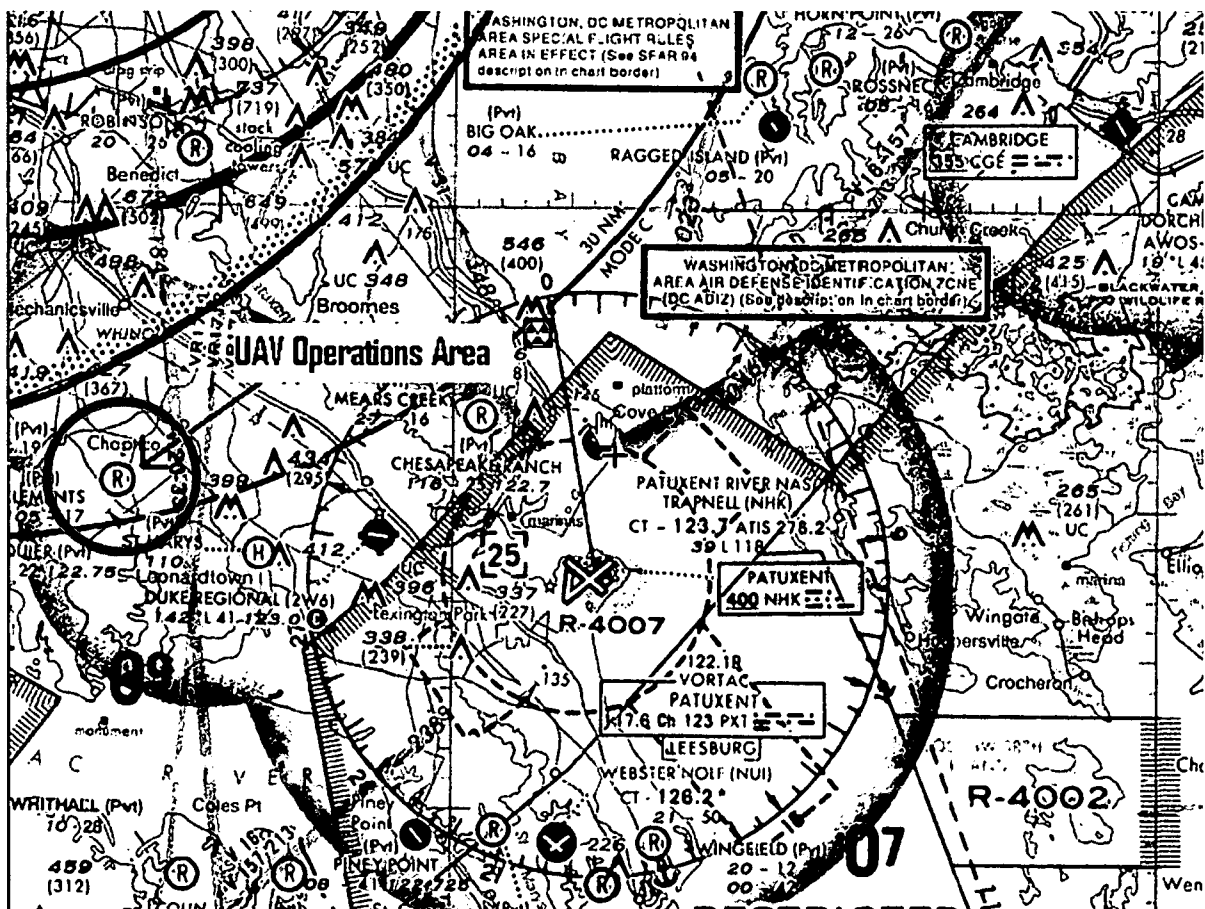


Figure 1. Aeronautical Chart

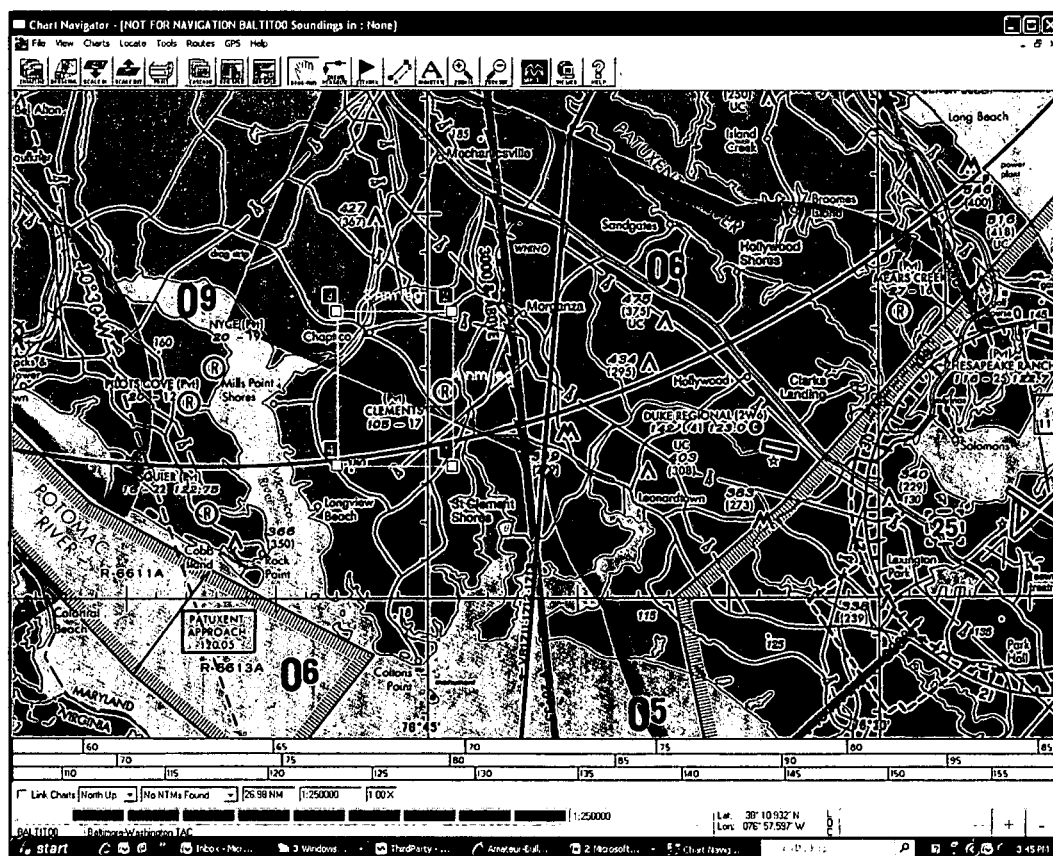


Figure 2. Kestrel – T Flight Test Area

Waypoints for Proposed Kestrel-T Experimental Flight Box - 4MD4 Operations		
Point Name	Latitude	Longitude
Point 1	38° 18.418' N	076° 44.136' W
Point 2	38° 22.440' N	076° 44.153' W
Point 3	38° 22.448' N	076° 47.988' W
Point 4	38° 18.447' N	076° 47.967' W

c. Authorized flight times and conditions. All flight operations must be conducted during daylight hours under visual flight rules (VFR). Potomac TRACN (PCT) will NOT be requiring VHF/UHF monitoring or communication. The following conditions will be included in your operating limitations.

- (1) Operations shall be conducted below 1000 MSL.
- (2) Flight operations shall be contained in an area west of 4MD4. The primary containment area is identified as being 2nm north, 2nm south, and 3nm west of the airport as identified in Figure 2 above. All flight operations must remain clear of the ADIZ.
- (3) The UAS PIC must notify the PCT TRACON Operations Manager

at (540) 349-7541 and PAX River NAS at (301) 342-3740 at least 30 minutes prior to launch and immediately upon termination of operations each day. DTI must provide PCT with an on-site contact name and phone number for two-way communications with ATC for each flight.

(4) The Kestrel UAS shall transmit the assigned beacon code 0377 and altitude information (Mode-C) for the duration of the flight. Any failure of the transponder or inability to properly squawk the assigned code shall be reported to PCT and flight operations shall be terminated.

(5) The Kestrel pilot shall have the capability of maneuvering the UAS or suspending operations as instructed by PCT.

(6) At no time will the external pilot conduct his/her duties more than 1 mile laterally or 1000 ft vertically from the UA.

(7) A Notice to Airmen (NOTAM) shall be issued when UAS operations are being conducted. (Note: Do not use 'distant' or D here as the NOTAM classification and codes have recently been changed.) DTI shall contact the Automated Flight Service Station (FSS) no less than 48 hours prior to the operation and provide:

- i) Name, address, and telephone number of the person giving notice.
- ii) Nature of the activity.
- iii) Date, time, and duration of the activity.
- iv) Size of the affected area in nautical mile radius and affected altitudes.
- v) Location of center of affected area in relation to airport.
- vi) Location of center of affected area in relation to nearest VOR/DME or VORTAC.

d. Criteria for remaining in the flight test area. The UAS PIC must ensure all UA flight operations remain within the lateral and vertical boundaries of the flight test area. Furthermore, the UAS PIC must take into account all factors that may affect the capability of the UA to remain within the flight test area. This includes, but is not limited to, considerations for wind, gross weight, and glide distances.

e. Incident/accident reporting. Any incident/accident and any flight operation that transgresses the lateral or vertical boundaries of the flight test area or any restricted airspace must be reported to the FAA within 24 hours. This information must be reported to the Unmanned Aircraft Program Office, AFS-407. AFS-407 can be reached by telephone at 202-385-4636 and fax at 202-385-4651. Accidents must be reported to the National Transportation Safety Board (NTSB) per instructions contained on the NTSB Web site: www.nts.gov. Further flight operations must not be conducted until the incident is reviewed by AFS-407 and authorization to resume operations is provided to DTI.

5. UA Pilots and Observers.

a. UA PIC roles and responsibilities.

- (1) The UA PIC must perform crew duties for only one UA at a time.
- (2) All flight operations must have a designated UA PIC. The UA PIC has responsibility over each flight conducted and is accountable for the UA flight operation.

(3) The UA PIC is responsible for the safety of the UA as well as persons and property along the UA flight path. This includes, but is not limited to, collision avoidance and the safety of persons and property in the air and on the ground.

(4) The UA PIC must avoid densely populated areas (§ 91.319) and exercise increased vigilance when operating within or in the vicinity of published airway boundaries.

b. UA PIC certification and ratings requirements.

(1) The UA PIC must hold and be in possession of, at a minimum, an FAA private pilot certificate, with either an airplane, rotorcraft, or powered-lift category; and single- or multiengine class ratings appropriate to the type of UA being operated.

(2) The UA PIC must have and be in possession of a valid second-class (or higher) airman medical certificate issued under 14 CFR part 67, Medical Standards and Certification.

c. UA PIC currency, flight review, and training.

(1) No person may act as pilot in command of an unmanned aircraft unless that person has made at least three takeoffs and three landings in manned aircraft within the preceding 90 days acting as the sole manipulator of the flight controls.

(2) The UA PIC must have a flight review in manned aircraft every 24 calendar months in accordance with § 61.56, Flight review.

(3) The UA PIC must maintain currency in unmanned aircraft in accordance with Defense Technologies, Inc. company procedures.

(4) The UA PIC must have a flight review in unmanned aircraft every 24 calendar months in accordance with Defense Technologies, Inc., procedures.

(5) All UA PICs must have successfully completed applicable Defense Technologies, Inc. training for the UAS.

d. Supplemental UA pilot roles and responsibilities.

(1) Any additional UA pilot(s) assigned to a crew station during UA flight operations will be considered a supplemental UA pilot.

(2) A supplemental UA pilot assists the PIC in the operation of the UA and may do so at the same or a different control station as the PIC. The UA PIC will have operational override capability over any supplemental UA pilots, regardless of position.

(3) A supplemental UA pilot must perform crew duties for only one UA at a time.

e. Supplemental UA pilot certification.

(1) The supplemental UA PIC must hold and be in possession of, at a minimum, an FAA private pilot certificate, with either an airplane, rotorcraft, or powered-lift category; and single- or multiengine class ratings appropriate to the type of UA being operated.

(2) The UA PIC must have and be in possession of a valid second-class (or higher) airman medical certificate issued under 14 CFR part 67, Medical Standards and Certification.

f. Supplemental UA pilot currency, flight review, and training.

(1) All UA pilots must maintain currency in unmanned aircraft in accordance with Defense Technologies, Inc. company procedures.

(2) All UA pilots must have a flight review in unmanned aircraft every 24 calendar months in accordance with Defense Technologies, Inc., procedures.

(3) All UA pilots must have successfully completed applicable Defense Technologies, Inc., training for the UAS.

g. Observer roles and responsibilities. The task of the observer is to provide the UA PIC(s) with instructions to maneuver the UA clear of any potential collision with other traffic. To satisfy these requirements—

(1) The observer must perform crew duties for only one UA at a time.

(2) At no time will the observer permit the UA to operate beyond the line-of-sight necessary to ensure maneuvering information can be reliably determined.

(3) At no time will the observer conduct his/her duties more than 1 nm laterally or 1000 ft vertically from the UA.

(4) An observer must maintain continuous visual contact with the UA to discern UA attitude and trajectory in relation to conflicting traffic.

(5) An observer may be positioned in a chase aircraft. When a chase aircraft is used, it must maintain a reasonable proximity, and must position itself relative to the UA to reduce the hazard of collision in accordance with § 91.111, Operating near other aircraft. When the observer is located in a chase aircraft, the observer's duties must be dedicated to the task of observation only. Concurrent duty as pilot of the chase aircraft is not authorized.

(6) Observers must continually scan the airspace for other aircraft that pose a potential conflict.

(7) All flight operations conducted in the flight test area must have an observer to perform traffic avoidance and visual observation to fulfill the see-and-avoid requirement of § 91.113, Right-of-way rules: Except water operations.

h. Observer certification.

(1) All observers must either hold, at a minimum, an FAA private pilot license or military equivalent, or must have successfully completed specific observer training acceptable to the FAA. An observer does not require currency as a pilot.

(2) All observers must have in their possession a valid second-class (or higher) airman medical certificate issued under part 67

i. Observer training.

(1) All observers must be thoroughly trained, be familiar with, and possess operational experience with the equipment being used. Such training is necessary for observation and detection of other aircraft for collision avoidance purposes as outlined in Defense Technologies, Inc., program letter.

(2) All observers must have successfully completed applicable Defense Technologies, Inc., training for the UAS.

6. Equipage.

a. The UAS must be equipped with an operable transponder with Mode C or Mode S, and two-way communications equipment allowing communications between the UA pilot, chase aircraft, observers, all UAS control stations.

b. The UA and chase aircraft must be equipped with operable navigation, position, and/or strobe/anti-collision lights. Strobe/anti-collision lights must be illuminated during all operations.

7. Communications.

a. **Before UA flights.** Before conducting operations, the frequency spectrum used for operation and control of the UA must be approved by the Federal Communications Commission or other appropriate government oversight agency.

b. During UA flights.

(1) Appropriate air traffic frequencies must be monitored during flight operations.

(2) All UA positions must maintain two-way communications with each other during all operations. If unable to maintain two-way communication, the UA PIC will expeditiously return the UA to its base of operations while remaining within the flight test area and conclude the flight operation.

8. Flight Conditions.

a. **Daylight operations.** All flight operations must be conducted during daylight hours in visual meteorological conditions (VMC), including cloud clearance minimums as specified in § 91.155, Basic VFR weather minimums. Flight operation in instrument meteorological conditions (IMC) is not permitted.

b. Prohibitions.

(1) The UA is prohibited from aerobatic flight, that is, an intentional maneuver involving an abrupt change in the UA's attitude, an abnormal acceleration, or other flight action not necessary for normal flight. (See § 91.303, Aerobatic flight.)

(2) Flight operations must not involve carrying hazardous material or the dropping of any objects or external stores.

(3) Each UA must be operated by only one control station at a time. A control station may not be used to operate multiple UAS.

c. Transponder requirements.

(1) The UA must operate an approved operational Mode C or Mode S altitude encoding transponder during all flight operations.

(2) Chase aircraft transponders must be on standby while performing chase operations flight with the UA.

d. Transponder failure.

(1) In the event of transponder failure on either the UA or the chase aircraft, the UA must conclude all flight operations and expeditiously return to its base of operations within the prescribed limitations of this authorization.

(2) In the event of UA transponder failure, a chase aircraft will operate its transponder in Mode C.

e. Notice to airman. Defense Technologies, Inc., must request the issuance of a Notice to Airman (NOTAM) through the Automated Flight Service Station at least 24 hours before flight operation.

9. Flight Termination and Lost Link Procedures.

a. Flight termination. In accordance with Defense Technologies, Inc., program letter, Rev. 1.4, dated 12/30/09, flight termination must be initiated at any point that safe operation of the UA cannot be maintained or if hazard to persons or property is imminent.

b. Lost link procedures. In the event of lost link, the UA must provide a means of automatic recovery that ensures airborne operations are predictable and that the UA remains within the flight test area. The chase aircraft or observer, all other UAS control stations, and the appropriate ATC facility will be immediately notified of the lost link condition and the expected UA response.

10. Maintenance and Inspection. (Ref.: DTI-UAS-MAIN-INSP-01, Kestral-T UAS Maintenance and Inspection Policy, Rev. 2.3, 12/28/09, AEA-FSDO-27-accepted 12/30/09).

a. General requirements. The UAS must not be operated unless it is inspected and maintained in accordance with the Defense Technologies, Inc., Kestral-T UAS, Daily Aircraft Condition Inspection Checklist, Rev. 2.3, dated 12/28/09, reportable on the Aircraft Discrepancy Form, Rev. 2.3, dated 12/28/09, and Daily Ground Station Condition Inspection Checklist, Rev. 2.3, dated 12/28/09, reportable on the Ground Station Discrepancy Form, Rev. 2.3, dated 12/28/09, or later accepted FAA revision. Defense Technologies, Inc., must establish and maintain aircraft maintenance records (see paragraph 10(d) below).

b. Inspections. No person may operate this UAS within the preceding 12 calendar months unless it has had a condition inspection performed according to the Defense Technologies, Inc., Kestral-T UAS, Daily Aircraft Condition Inspection Checklist, Rev. 2.3, dated 12/28/09, reportable on the Aircraft Discrepancy Form, Rev. 2.3, dated 12/28/09, and Daily Ground Station Condition Inspection Checklist, Rev. 2.3, dated 12/28/09, reportable on the Ground Station Discrepancy Form, Rev. 2.3, dated 12/28/09, or later accepted FAA revision. The UAS must also have been found to be in a condition for safe operation. This inspection will be recorded in the UAS maintenance records as described in paragraph 10(d) below.

c. Authorized inspectors. Only those individuals trained and authorized by Defense Technologies, Inc., and acceptable to the FAA may perform the inspections and maintenance required by these operating limitations.

d. Maintenance and inspection records. Maintenance and inspections of the UAS must be recorded in the UAS maintenance records. The following information must be recorded:

(1) Maintenance record entries must include a description of the work performed, the date of completion for the work, the UAS's total time-in-service, and the name and signature of the person performing the work.

(2) Inspection entries must contain the following, or a similarly worded, statement: *I certify that this UAS was inspected on (date), in accordance with the scope and detail of the Defense Technologies, Inc., Kestral-T UAS, Daily Aircraft Condition Inspection Checklist, Rev. 2.3, dated 12/28/09, reportable on the Aircraft Discrepancy Form, Rev. 2.3, dated 12/28/09, and Daily Ground Station Condition Inspection Checklist, Rev. 2.3, dated 12/28/09, reportable on the Ground Station Discrepancy Form, Rev. 2.3, dated 12/28/09, or later accepted FAA revision, and was found to be in a condition for safe operation.*

(3) UAS instruments and equipment required to be installed must be inspected and maintained in accordance with the requirements of the *Defense Technologies, Inc.* Any maintenance or inspection of this equipment must be recorded in the UAS maintenance records.

(4) No person may operate this UAS unless the altimeter system and transponder have been tested within the preceding 24 calendar months in accordance with § 91.411, Altimeter system and altitude reporting equipment tests and inspections, and § 91.413, ATC transponder tests and inspections. These inspections will be recorded in the UAS maintenance records.

11. Information Reporting. Defense Technologies, Inc., will provide the following information to Donald.E.Grampp@FAA.GOV on a monthly basis. A copy of the report shall be provided to AIR-200.

- a. Number of flights conducted under this certificate.
- b. Pilot duty time per flight.
- c. Unusual equipment malfunctions (hardware or software).
- d. Deviations from ATC instructions.
- e. Unintended entry into lost link flight mode that results in a course change.

12. Revisions and Other Provisions.

a. Experimental certificates, program letters, and operating limitations. The experimental certificate, FAA-accepted Defense Technologies, Inc., program letter, and operating limitations cannot be reissued, renewed, or revised without application being made to the New Cumberland Manufacturing Inspection District Office MIDO, in coordination with AIR-200. AIR-200 will be responsible for FAA Headquarters internal

coordination with the Aircraft Certification Service, Flight Standards Service, Air Traffic Organization, Office of the Chief Council, and Office of Rulemaking.

b. Certificates of waiver or authorization. DTI shall immediately notify the Production and Airworthiness Division, AIR-200, and the New Cumberland MIDO, if there is any plan for requesting a Certificate of Authorization or Waiver (COA) for UAS operations during the time the experimental certificate is in effect. An entry in the aircraft logbook is required to document that the aircraft flight authority has been changed from the experimental certificate to COA. When COA operations are concluded and the aircraft resumes flying under the experimental certificate, a record entry will be made in the aircraft logbook by an appropriately rated person to document that the aircraft is in a condition for safe operation and appropriately configured.

c. Amendments and cancellations. The provisions and limitations annotated in this operational approval may be amended or cancelled at any time as deemed necessary by the FAA.

d. Reviews of revisions. (Ref.: DTI-UAS-MAIN-INSP-01, Kestral-T UAS Maintenance and Inspection Policy, Rev. 2.3, dated 12/28/09, AEA-FSDO-27-accepted 12/30/09). All revisions to Defense Technologies, Inc., Kestral-T UAS UAS Maintenance and Inspection Policy, Rev. 2.3, dated 12/28/09, AEA-FSDO-27-accepted 12/30/09, Daily Aircraft Condition Inspection Checklist, Rev. 2.3, dated 12/28/09, reportable on the Aircraft Discrepancy Form, Rev. 2.3, dated 12/28/09, and Daily Ground Station Condition Inspection Checklist, Rev. 2.3, dated 12/28/09, reportable on the Ground Station Discrepancy Form, Rev. 2.3, dated 12/28/09, must be reviewed and accepted by the Washington Flight Standards District Office (FSDO).

13. UAS Modifications.

a. Software and system changes. All software and system changes will be documented as part of the normal maintenance procedures and will be available for inspection. All software and system changes must be inspected and approved per Defense Technologies, Inc., Kestral-T UAS, Daily Aircraft Condition Inspection Checklist, Rev. 2.3, dated 12/28/09, reportable on the Aircraft Discrepancy Form, Rev. 2.3, dated 12/28/09, and Daily Ground Station Condition Inspection Checklist, Rev. 2.3, dated 12/28/09, reportable on the Ground Station Discrepancy Form, Rev. 2.3, dated 12/28/09, or later accepted FAA revision. All software changes to the aircraft and control station are categorized as major changes, and must be provided in summary form at the time they are incorporated.

b. Major modifications. All major modifications, whether performed under the experimental certificate, COA, or other authorizations, that could potentially affect the safe operation of the system, must be documented and provided to the FAA before operating the aircraft under this certificate. Major modifications incorporated under COA or other authorization needs to be provided only if the aircraft is flown under these authorizations during the effective period of the experimental certificate.

c. Submission of modifications. All information requested must be provided to AIR-200.

End of Limitations

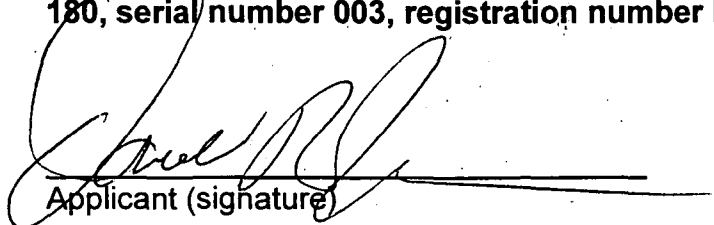


Henry K. Cooper
Senior Aviation Safety Inspector
New Cumberland Manufacturing Inspection District Office
Bldg. 201, Rm. 102,
400 Airport Road
New Cumberland, PA 17070-3419

JAN 07 2011

Issuance Date:

I certify that I have read and understand the operating limitations and conditions that are a part of the special airworthiness certificate, FAA Form 8130-7, issued on (add date), for the purposes of research and development, market survey, and/or crew training. This special airworthiness certificate is issued for Kestrel – T, RCS 180, serial number 003, registration number N2554R.



Applicant (signature)

2-15-11
Date:

Name (Printed): Donald Jackson

Title: Senior Vice President

Company: Defense Technologies, Inc.

FAA
AME-1110-04
FEB 17 2011
HC



New Cumberland Manufacturing Inspection District Office
Bldg. 201, Rm. 102,
400 Airport Road
New Cumberland, PA 17070-3419

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Operating Limitations
Experimental: Research and Development, Market Survey,
and/or Crew Training

COPY

Registered Owner Name: Defense Technologies, Inc.	Year Manufactured: 2006
Registered Owner Address: 21795 Shangri-La Dr Lexington Park Maryland 20653	Aircraft Serial Number: 003
Aircraft Description: Kestrel-T: Giant Scale Rc Size Standard Wing And Tail Configuration Tricycle Gear Configuration	Aircraft Model Designation: Kestrel – T
Aircraft Registration: N2554V	Engine: RCS 180
Aircraft Builder: Defense Technologies, Inc.	Propeller: Bambula 20 x 8 wood

The following conditions and limitations apply to all unmanned aircraft system (UAS) flight operations for the Kestrel – T, RCS 180 while operating in the National Airspace System (NAS).

1. General Information.

a. Integrated system. For the purposes of this special airworthiness certificate and operating limitations, the Kestrel – T, RCS 180 operated by Defense Technologies, Inc., is considered to be an integrated system. The system is composed of the following:

- (1) Kestrel – T, RCS 180, serial number 003,
- (2) UAS control station(s), that is, fixed, mobile, ground-based, or airborne.
- (3) Telemetry, launch, and recovery equipment.

(4) Communications and navigation equipment, including ground and/or airborne equipment used for command and control of the Kestrel – T, RCS 180.

(5) Ground or airborne equipment used for communication with the chase aircraft, other members of the flight crew, observers, air traffic control (ATC), and other users of the NAS.

b. Compliance with 14 CFR part 61 (Certification: Pilots, Flight Instructors, and Ground Instructors) and part 91 (General Operating and Flight Rules). Unless otherwise specified in this document, the UA pilot-in-command (PIC) and Defense Technologies, Inc., must comply with all applicable sections and parts of 14 CFR including, but not limited to, parts 61 and 91.

c. Operational requirements.

(1) No person may operate this UAS for other than the purpose of research and development, market survey, and/or crew training, to accomplish the flight operation outlined in Defense Technologies, Inc., program letter dated 12/30/2009, Rev. 2.5, which describes compliance with § 21.193(d), Experimental certificates: General, and has been made available to the UA PIC.

(2) This UAS must be operated in accordance with applicable air traffic and general operating rules of part 91 and all additional limitations herein prescribed under the provisions of § 91.319(i), Aircraft having experimental certificates: Operating limitations.

(3) Defense Technologies, Inc., must accumulate at least 50 flight hours under its experimental airworthiness certificate before customer crew training is permitted, in accordance with § 21.195(d), Experimental certificates: Aircraft to be used for market surveys, sales demonstrations, and customer crew training.

d. UA condition. The UA PIC must determine that the UA is in a condition for safe operation, and in a configuration appropriate for the purpose of the intended flight.

e. Multiple-purpose operations. When changing between operating purposes of a multiple purpose certificate, the operator must determine that the aircraft is in a condition for safe operation and appropriate for the purpose intended. A record entry will be made by an appropriately rated person (that is, an individual authorized by the applicant and acceptable to the FAA) to document that finding in the maintenance records.

f. Operation exceptions. No person may operate this UA to carry property for compensation or hire (§ 91.319(a)(2)).

g. UA markings.

(1) This UA must be marked with its U.S. registration number in accordance with part 45 or alternative marking approval issued by the FAA Production and Airworthiness Division, AIR-200.

(2) This UA must display the word *Experimental* in accordance with § 45.23(b), Display of marks, unless otherwise granted an exemption from this requirement.

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h. Required documentation. Before conducting the initial flight of the Kestrel – T, RCS 180, Defense Technologies, Inc., must forward a copy of the Kestrel – T, RCS 180 program letter, special airworthiness certificate, and operating limitations to the following personnel:

(1) Peter Acevedo, FAA Air Traffic Representative, Eastern Service Center, System Support, 1701 Columbia Ave, College Park, GA 30337, telephone (404) 305-5598, email peter.k.acevedo@faa.gov.

(2) Richard Posey, Aviation Safety Inspector, Production and Airworthiness Division, AIR-200, 800 Independence Ave, SW, Washington, DC 20591, telephone (202) 267-9538, email richard.posey@faa.gov.

i. Change in registrant address. Section 47.45, Change of address, requires that the FAA Aircraft Registry be notified within 30 days of any change in the aircraft registrant's address. Such notification is to be made by providing AC Form 8050-1, Aircraft Registration Application, to the FAA Aircraft Registration Branch (AFS-750) in Oklahoma City, Oklahoma.

j. Certificate display and manual availability. The airworthiness and registration certificates must be displayed, and the aircraft flight manual must be available to the pilot, as prescribed by the applicable sections of 14 CFR, or as prescribed by an exemption granted in accordance with 14 CFR part 11, Investigative and Enforcement Procedures, to Defense Technologies, Inc.

2. Program Letter. The Kestrel – T, RCS 180 program letter, dated 12/30/2009, Rev.2.5, will be used as a basis for determining the operating limitations prescribed in this document. All flight operations must be conducted in accordance with the provisions of this document.

3. Initial Flight Testing.

a. Requirements. Flight operations must be conducted within visual line of sight of the pilot/observer. Initial flight testing must be completed upon accumulation of 25 flight hours. Following satisfactory completion of initial flight testing, the operations manager or chief pilot must certify in the records that the aircraft has been shown to comply with § 91.319(b). Compliance with § 91.319(b) must be recorded in the aircraft records with the following, or a similarly worded, statement:

I certify that the prescribed flight test hours have been completed and the aircraft is controllable throughout its normal range of speeds and throughout all maneuvers to be executed, has no hazardous operating characteristics or design features, and is safe for operation. The following aircraft operating data has been demonstrated during the flight testing: speeds Vx _____, and Vy _____, and the weight _____ and CG location _____ at which they were obtained.

b. Aircraft operations for the purpose of market surveys, sales demonstrations, and customer crew training. These operations cannot be performed until 50 flight

hours have been accomplished. An entry in the maintenance records is required as evidence of compliance.

4. Authorized Flight Operations Area.

a. **Description of the authorized flight operations area.** The flight operations area is located in Clements, MD. Clements Field, 4MD4 is a private airport located at:

Latitude 38° 20.408N
Longitude 76° 44.432W

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b. **Flight test area.** The flight operations area authorized for the UA will be referred to as the flight test area, and is depicted graphically below.

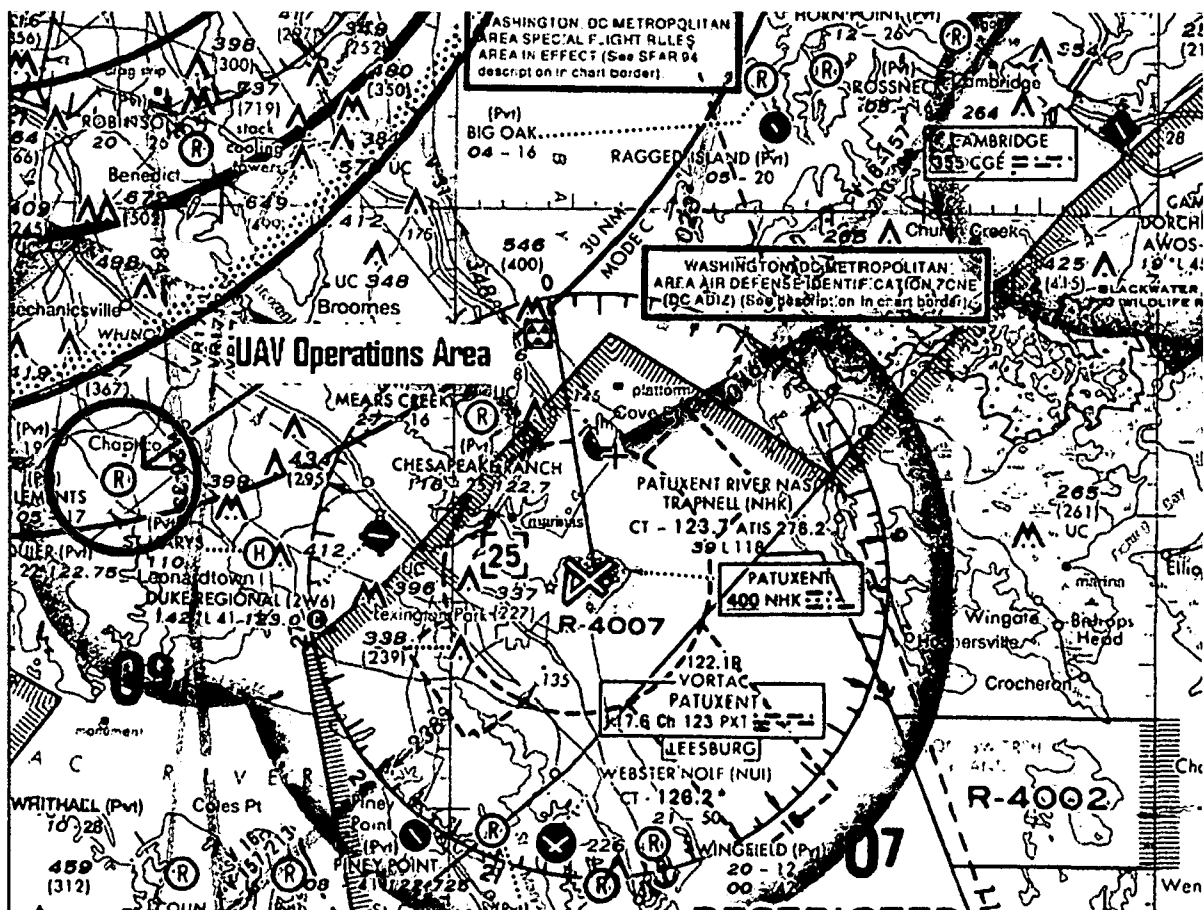


Figure 1. Aeronautical Chart

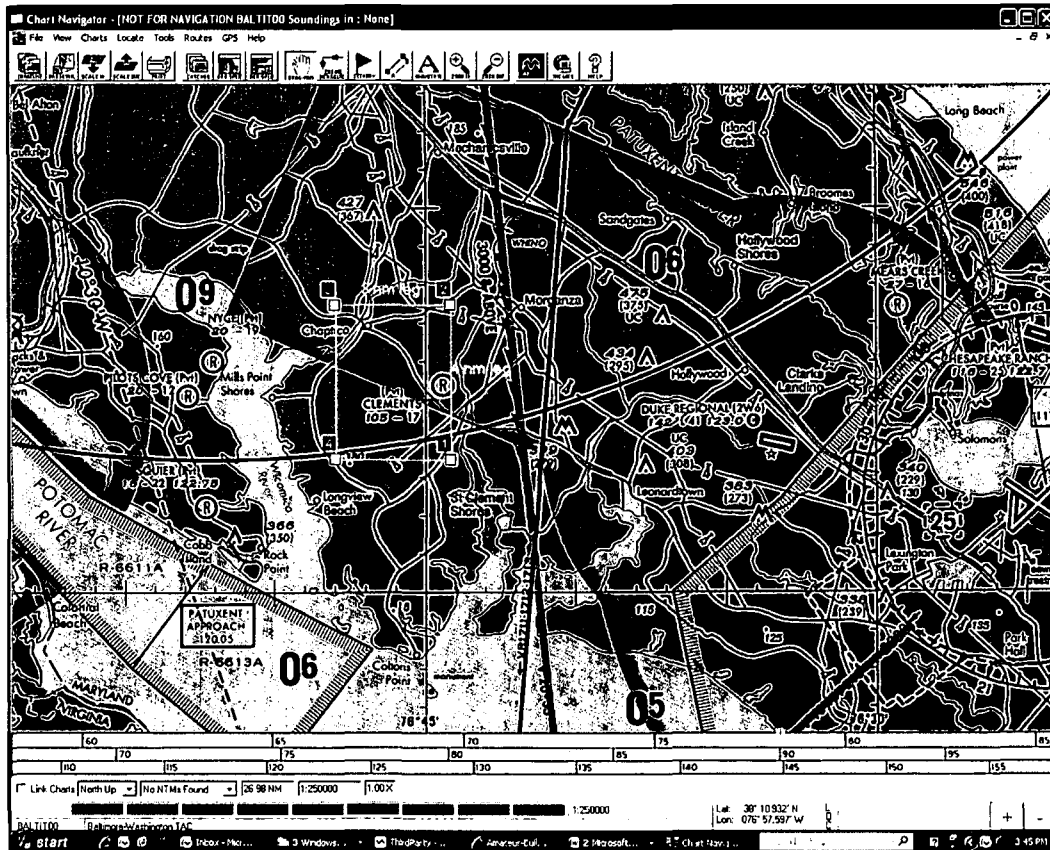


Figure 2. Kestrel – T Flight Test Area

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Waypoints for Proposed Kestrel-T Experimental Flight Box - 4MD4 Operations		
Point Name	Latitude	Longitude
Point 1	38° 18.418' N	076° 44.136' W
Point 2	38° 22.440' N	076° 44.153' W
Point 3	38° 22.448' N	076° 47.988' W
Point 4	38° 18.447' N	076° 47.967' W

c. **Authorized flight times and conditions.** All flight operations must be conducted during daylight hours under visual flight rules (VFR). Potomac TRACN (PCT) will NOT be requiring VHF/UHF monitoring or communication. The following conditions will be included in your operating limitations.

- (1) Operations shall be conducted below 1000 MSL.
- (2) Flight operations shall be contained in an area west of 4MD4. The primary containment area is identified as being 2nm north, 2nm south, and 3nm west of the airport as identified in Figure 2 above. All flight operations must remain clear of the ADIZ.
- (3) The UAS PIC must notify the PCT TRACON Operations Manager

at (540) 349-7541 and PAX River NAS at (301) 342-3740 at least 30 minutes prior to launch and immediately upon termination of operations each day. DTI must provide PCT with an on-site contact name and phone number for two-way communications with ATC for each flight.

(4) The Kestrel UAS shall transmit the assigned beacon code 0377 and altitude information (Mode-C) for the duration of the flight. Any failure of the transponder or inability to properly squawk the assigned code shall be reported to PCT and flight operations shall be terminated.

(5) The Kestrel pilot shall have the capability of maneuvering the UAS or suspending operations as instructed by PCT.

(6) At no time will the external pilot conduct his/her duties more than 1 mile laterally or 1000 ft vertically from the UA.

(7) A Notice to Airmen (NOTAM) shall be issued when UAS operations are being conducted. (Note: Do not use 'distant' or D here as the NOTAM classification and codes have recently been changed.) DTI shall contact the Automated Flight Service Station (FSS) no less than 48 hours prior to the operation and provide:

- i) Name, address, and telephone number of the person giving notice.
- ii) Nature of the activity.
- iii) Date, time, and duration of the activity.
- iv) Size of the affected area in nautical mile radius and affected altitudes.
- v) Location of center of affected area in relation to airport.
- vi) Location of center of affected area in relation to nearest VOR/DME or VORTAC.

d. Criteria for remaining in the flight test area. The UAS PIC must ensure all UA flight operations remain within the lateral and vertical boundaries of the flight test area. Furthermore, the UAS PIC must take into account all factors that may affect the capability of the UA to remain within the flight test area. This includes, but is not limited to, considerations for wind, gross weight, and glide distances.

e. Incident/accident reporting. Any incident/accident and any flight operation that transgresses the lateral or vertical boundaries of the flight test area or any restricted airspace must be reported to the FAA within 24 hours. This information must be reported to the Unmanned Aircraft Program Office, AIR-160. AIR-160 can be reached by telephone at 202-385-4636 and fax at 202-385-4651. Accidents must be reported to the National Transportation Safety Board (NTSB) per instructions contained on the NTSB Web site: www.nts.gov. Further flight operations must not be conducted until the incident is reviewed by AIR-160 and authorization to resume operations is provided to DTI.

5. UA Pilots and Observers.

a. UA PIC roles and responsibilities.

- (1) The UA PIC must perform crew duties for only one UA at a time.
- (2) All flight operations must have a designated UA PIC. The UA PIC has responsibility over each flight conducted and is accountable for the UA flight operation.

(3) The UA PIC is responsible for the safety of the UA as well as persons and property along the UA flight path. This includes, but is not limited to, collision avoidance and the safety of persons and property in the air and on the ground.

(4) The UA PIC must avoid densely populated areas (§ 91.319) and exercise increased vigilance when operating within or in the vicinity of published airway boundaries.

b. UA PIC certification and ratings requirements.

(1) The UA PIC must hold and be in possession of, at a minimum, an FAA private pilot certificate, with either an airplane, rotorcraft, or powered-lift category; and single- or multiengine class ratings appropriate to the type of UA being operated.

(2) The UA PIC must have and be in possession of a valid second-class (or higher) airman medical certificate issued under 14 CFR part 67, Medical Standards and Certification.

c. UA PIC currency, flight review, and training.

(1) No person may act as pilot in command of an unmanned aircraft unless that person has made at least three takeoffs and three landings in manned aircraft within the preceding 90 days acting as the sole manipulator of the flight controls.

(2) The UA PIC must have a flight review in manned aircraft every 24 calendar months in accordance with § 61.56, Flight review.

(3) The UA PIC must maintain currency in unmanned aircraft in accordance with (applicant name) company procedures.

(4) The UA PIC must have a flight review in unmanned aircraft every 24 calendar months in accordance with Defense Technologies, Inc., procedures.

(5) All UA PICs must have successfully completed applicable (applicant name) training for the UAS.

d. Supplemental UA pilot roles and responsibilities.

(1) Any additional UA pilot(s) assigned to a crew station during UA flight operations will be considered a supplemental UA pilot.

(2) A supplemental UA pilot assists the PIC in the operation of the UA and may do so at the same or a different control station as the PIC. The UA PIC will have operational override capability over any supplemental UA pilots, regardless of position.

(3) A supplemental UA pilot must perform crew duties for only one UA at a time.

e. Supplemental UA pilot certification. The supplemental UA PIC need not be a certificated pilot, but must have successfully completed a recognized private pilot ground school program.

f. Supplemental UA pilot currency, flight review, and training.

(1) All UA pilots must maintain currency in unmanned aircraft in accordance with (applicant name) company procedures.

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(2) All UA pilots must have a flight review in unmanned aircraft every 24 calendar months in accordance with Defense Technologies, Inc., procedures.

(3) All UA pilots must have successfully completed applicable Defense Technologies, Inc., training for the UAS.

g. Observer roles and responsibilities. The task of the observer is to provide the UA PIC(s) with instructions to maneuver the UA clear of any potential collision with other traffic. To satisfy these requirements—

(1) The observer must perform crew duties for only one UA at a time.

(2) At no time will the observer permit the UA to operate beyond the line-of-sight necessary to ensure maneuvering information can be reliably determined.

(3) At no time will the observer conduct his/her duties more than 1000 ft laterally or 1000 ft vertically from the UA.

(4) An observer must maintain continuous visual contact with the UA to discern UA attitude and trajectory in relation to conflicting traffic.

(5) An observer may be positioned in a chase aircraft. When a chase aircraft is used, it must maintain a reasonable proximity, and must position itself relative to the UA to reduce the hazard of collision in accordance with § 91.111, Operating near other aircraft. When the observer is located in a chase aircraft, the observer's duties must be dedicated to the task of observation only. Concurrent duty as pilot of the chase aircraft is not authorized.

(6) Observers must continually scan the airspace for other aircraft that pose a potential conflict.

(7) All flight operations conducted in the flight test area must have an observer to perform traffic avoidance and visual observation to fulfill the see-and-avoid requirement of § 91.113, Right-of-way rules: Except water operations.

h. Observer certification.

(1) All observers must either hold, at a minimum, an FAA private pilot license or military equivalent, or must have successfully completed specific observer training acceptable to the FAA. An observer does not require currency as a pilot.

(2) All observers must have in their possession a valid third-class (or higher) airman medical certificate issued under part 67. A valid second-class airman medical certificate is required after 9/10/2008.

i. Observer training.

(1) All observers must be thoroughly trained, be familiar with, and possess operational experience with the equipment being used. Such training is necessary for observation and detection of other aircraft for collision avoidance purposes as outlined in Defense Technologies, Inc., program letter.

(2) All observers must have successfully completed applicable Defense Technologies, Inc., training for the UAS.

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6. Equipage.

a. The UAS must be equipped with an operable transponder with Mode C or Mode S, and two-way communications equipment allowing communications between the UA pilot, chase aircraft, observers, all UAS control stations.

b. The UA and chase aircraft must be equipped with operable navigation, position, and/or strobe/anti-collision lights. Strobe/anti-collision lights must be illuminated during all operations.

7. Communications.

a. **Before UA flights.** Before conducting operations, the frequency spectrum used for operation and control of the UA must be approved by the Federal Communications Commission or other appropriate government oversight agency.

b. During UA flights.

(1) Appropriate air traffic frequencies must be monitored during flight operations.

(2) All UA positions must maintain two-way communications with each other during all operations. If unable to maintain two-way communication, the UA PIC will expeditiously return the UA to its base of operations while remaining within the flight test area and conclude the flight operation.

8. Flight Conditions.

a. **Daylight operations.** All flight operations must be conducted during daylight hours in visual meteorological conditions (VMC), including cloud clearance minimums as specified in § 91.155, Basic VFR weather minimums. Flight operation in instrument meteorological conditions (IMC) is not permitted.

b. Prohibitions.

(1) The UA is prohibited from aerobatic flight, that is, an intentional maneuver involving an abrupt change in the UA's attitude, an abnormal acceleration, or other flight action not necessary for normal flight. (See § 91.303, Aerobatic flight.)

(2) Flight operations must not involve carrying hazardous material or the dropping of any objects or external stores.

(3) Each UA must be operated by only one control station at a time. A control station may not be used to operate multiple UAS.

c. Transponder requirements.

(1) The UA must operate an approved operational Mode C or Mode S altitude encoding transponder during all flight operations.

(2) Chase aircraft transponders must be on standby while performing chase operations flight with the UA.

CANCELLED

d. Transponder failure.

(1) In the event of transponder failure on either the UA or the chase aircraft, the UA must conclude all flight operations and expeditiously return to its base of operations within the prescribed limitations of this authorization.

(2) In the event of UA transponder failure, a chase aircraft will operate its transponder in Mode C.

e. Notice to airman. Defense Technologies, Inc., must request the issuance of a Notice to Airman (NOTAM) through the Automated Flight Service Station at least 24 hours before flight operation.

9. Flight Termination and Lost Link Procedures.

a. Flight termination. In accordance with Defense Technologies, Inc., program letter, Rev. 2.5, dated 12/30/09, flight termination must be initiated at any point that safe operation of the UA cannot be maintained or if hazard to persons or property is imminent.

b. Lost link procedures. In the event of lost link, the UA must provide a means of automatic recovery that ensures airborne operations are predictable and that the UA remains within the flight test area. The chase aircraft or observer, all other UAS control stations, and the appropriate ATC facility will be immediately notified of the lost link condition and the expected UA response.

10. Maintenance and Inspection. (Ref.: DTI-UAS-MAIN-INSP-01, Kestral-T UAS Maintenance and Inspection Policy, Rev. 2.3, 12/28/2009, AEA-FSDO-27-accepted 12/30/2009)

a. General requirements. The UAS must not be operated unless it is inspected and maintained in accordance with the Defense Technologies, Inc., Kestral-T UAS, Daily Aircraft Condition Inspection Checklist, Rev. 2.3, dated 12/28/09, reportable on the Aircraft Discrepancy Form, Rev. 2.3, dated 12/28/09, and Daily Ground Station Condition Inspection Checklist, Rev. 2.3, dated 12/28/09, reportable on the Ground Station Discrepancy Form, Rev. 2.3, dated 12/28/09, or later accepted FAA revision. Defense Technologies, Inc., must establish and maintain aircraft maintenance records (see paragraph 10(d) below).

b. Inspections. No person may operate this UAS within the preceding 12 calendar months unless it has had a condition inspection performed according to the Defense Technologies, Inc., Kestral-T UAS, Daily Aircraft Condition Inspection Checklist, Rev. 2.3, dated 12/28/09, reportable on the Aircraft Discrepancy Form, Rev. 2.3, dated 12/28/09, and Daily Ground Station Condition Inspection Checklist, Rev. 2.3, dated 12/28/09, reportable on the Ground Station Discrepancy Form, Rev. 2.3, dated 12/28/09, or later accepted FAA revision. The UAS must also have been found to be in a condition for safe operation. This inspection will be recorded in the UAS maintenance records as described in paragraph 10(d) below.

CANCELLED

c. Authorized inspectors. Only those individuals trained and authorized by Defense Technologies, Inc., and acceptable to the FAA may perform the inspections and maintenance required by these operating limitations.

d. Maintenance and inspection records. Maintenance and inspections of the UAS must be recorded in the UAS maintenance records. The following information must be recorded:

(1) Maintenance record entries must include a description of the work performed, the date of completion for the work, the UAS's total time-in-service, and the name and signature of the person performing the work.

(2) Inspection entries must contain the following, or a similarly worded, statement: *I certify that this UAS was inspected on (date), in accordance with the scope and detail of the Defense Technologies, Inc., Kestral-T UAS, Daily Aircraft Condition Inspection Checklist, Rev. 2.3, dated 12/28/09, reportable on the Aircraft Discrepancy Form, Rev. 2.3, dated 12/28/09, and Daily Ground Station Condition Inspection Checklist, Rev. 2.3, dated 12/28/09, reportable on the Ground Station Discrepancy Form, Rev. 2.3, dated 12/28/09, or later accepted FAA revision, and was found to be in a condition for safe operation.*

(3) UAS instruments and equipment required to be installed must be inspected and maintained in accordance with the requirements of the *Defense Technologies, Inc.* Any maintenance or inspection of this equipment must be recorded in the UAS maintenance records.

(4) No person may operate this UAS unless the altimeter system and transponder have been tested within the preceding 24 calendar months in accordance with § 91.411, Altimeter system and altitude reporting equipment tests and inspections, and § 91.413, ATC transponder tests and inspections. These inspections will be recorded in the UAS maintenance records.

11. Information Reporting. Defense Technologies, Inc., will provide the following information to Donald.E.Grampp@FAA.GOV on a monthly basis. A copy of the report shall be provided to AIR-200.

- a. Number of flights conducted under this certificate.
- b. Pilot duty time per flight.
- c. Unusual equipment malfunctions (hardware or software).
- d. Deviations from ATC instructions.
- e. Unintended entry into lost link flight mode that results in a course change.

12. Revisions and Other Provisions.

a. Experimental certificates, program letters, and operating limitations. The experimental certificate, FAA-accepted Defense Technologies, Inc., program letter, and operating limitations cannot be reissued, renewed, or revised without application being

CANCELLED

made to the New Cumberland Manufacturing Inspection District Office MIDO, in coordination with AIR-200. AIR-200 will be responsible for FAA Headquarters internal coordination with the Aircraft Certification Service, Flight Standards Service, Air Traffic Organization, Office of the Chief Council, and Office of Rulemaking.

b. Certificates of waiver or authorization. DTI shall immediately notify the Production and Airworthiness Division, AIR-200, and the New Cumberland MIDO, if there is any plan for requesting a Certificate of Authorization or Waiver (COA) for UAS operations during the time the experimental certificate is in effect. An entry in the aircraft logbook is required to document that the aircraft flight authority has been changed from the experimental certificate to COA. When COA operations are concluded and the aircraft resumes flying under the experimental certificate, a record entry will be made in the aircraft logbook by an appropriately rated person to document that the aircraft is in a condition for safe operation and appropriately configured.

c. Amendments and cancellations. The provisions and limitations annotated in this operational approval may be amended or cancelled at any time as deemed necessary by the FAA.

d. Reviews of revisions. (Ref.: DTI-UAS-MAIN-INSP-01, Kestral-T UAS Maintenance and Inspection Policy, Rev. 2.3, dated 12/28/09, AEA-FSDO-27-accepted 12/30/09)

All revisions to Defense Technologies, Inc., Kestral-T UAS UAS Maintenance and Inspection Policy, Rev. 2.3, dated 12/28/09, AEA-FSDO-27-accepted 12/30/09, Daily Aircraft Condition Inspection Checklist, Rev. 2.3, dated 12/28/09, reportable on the Aircraft Discrepancy Form, Rev. 2.3, dated 12/28/09, and Daily Ground Station Condition Inspection Checklist, Rev. 2.3, dated 12/28/09, reportable on the Ground Station Discrepancy Form, Rev. 2.3, dated 12/28/09, must be reviewed and accepted by the Washington Flight Standards District Office (FSDO).

13. UAS Modifications.

a. Software and system changes. All software and system changes will be documented as part of the normal maintenance procedures and will be available for inspection. All software and system changes must be inspected and approved per Defense Technologies, Inc., Kestral-T UAS, Daily Aircraft Condition Inspection Checklist, Rev. 2.3, dated 12/28/09, reportable on the Aircraft Discrepancy Form, Rev. 2.3, dated 12/28/09, and Daily Ground Station Condition Inspection Checklist, Rev. 2.3, dated 12/28/09, reportable on the Ground Station Discrepancy Form, Rev. 2.3, dated 12/28/09, or later accepted FAA revision. All software changes to the aircraft and control station are categorized as major changes, and must be provided in summary form at the time they are incorporated.

b. Major modifications. All major modifications, whether performed under the experimental certificate, COA, or other authorizations, that could potentially affect the safe operation of the system, must be documented and provided to the FAA before operating the aircraft under this certificate. Major modifications incorporated under COA or other

CANCELLED

authorization needs to be provided only if the aircraft is flown under these authorizations during the effective period of the experimental certificate.

c. Submission of modifications. All information requested must be provided to AIR-200.

End of Limitations



Henry K. Cooper
Senior Aviation Safety Inspector
New Cumberland Manufacturing Inspection District Office
Bldg. 201, Rm. 102,
400 Airport Road
New Cumberland, PA 17070-3419

JANUARY 7, 2010

Issuance Date:

I certify that I have read and understand the operating limitations and conditions that are a part of the special airworthiness certificate, FAA Form 8130-7, issued on _____, for the purposes of research and development, market survey, and/or crew training. This special airworthiness certificate is issued for Kestrel – T, RCS 180, serial number 003, registration number N2554V.

Robert J. Mudd Jr. for Don Jackson
Applicant (signature)

01/07/2010
Date:

Name (Printed): Donald Jackson

Title: Senior Vice President

Company: Defense Technologies, Inc.

FAA FORM 8130-6, APPLICATION FOR U.S. AIRWORTHINESS CERTIFICATE

Form Approved O.M.B. No. 2120-0018
12/31/2010U.S. Department
of Transportation
Federal Aviation
AdministrationAPPLICATION FOR
U.S. AIRWORTHINESS
CERTIFICATE

INSTRUCTIONS - Print or type. Do not write in shaded areas; these are for FAA use only. Submit original only to an authorized FAA Representative. If additional space is required, use attachment. For special flight permits complete Sections II, VI and VII as applicable.

I. AIRCRAFT DESIGNATION	1. REGISTRATION MARK	2. AIRCRAFT BUILDER'S NAME (Make)	3. AIRCRAFT MODEL DESIGNATION	4. YR. MFR.	FAA CODING
	N2554V	Defense Technologies, Inc	Kestrel-T	2008	
	5. AIRCRAFT SERIAL NO.	6. ENGINE BUILDER'S NAME (Make)	7. ENGINE MODEL DESIGNATION		
	003	RCS	180		
8. NUMBER OF ENGINES	9. PROPELLER BUILDER'S NAME (Make)	10. PROPELLER MODEL DESIGNATION	11. AIRCRAFT IS (Check if applicable)		
	1	Bambula	20" x 8"	IMPORT	

APPLICATION IS HEREBY MADE FOR: (Check applicable items)												
A	1	STANDARD AIRWORTHINESS CERTIFICATE (Indicate Category)	NORMAL	UTILITY	ACROBATIC	TRANSPORT	COMMUTER	BALLOON	OTHER			
B	X	SPECIAL AIRWORTHINESS CERTIFICATE (Check appropriate items)										
II. CERTIFICATION REQUESTED	7	PRIMARY										
	9	LIGHT-SPORT (Indicate Class)	AIRPLANE	POWER-PARACHUTE	WEIGHT-SHIFT-CONTROL	GLIDER	LIGHTER THAN AIR					
	2	LIMITED										
	5	PROVISIONAL (Indicate Class)	1	CLASS I								
			2	CLASS II								
	3	RESTRICTED (Indicate operation(s) to be conducted)	1	AGRICULTURE AND PEST CONTROL	2	AERIAL SURVEY	3	AERIAL ADVERTISING				
			4	FOREST (Wildlife Conservation)	5	PATROLLING	6	WEATHER CONTROL				
			0	OTHER (Specify)								
	4	EXPERIMENTAL (Indicate operation(s) to be conducted)	1	RESEARCH AND DEVELOPMENT	2	AMATEUR BUILT	3	EXHIBITION				
			4	AIR RACING	5	CREW TRAINING	6	MARKET SURVEY				
			0	TO SHOW COMPLIANCE WITH THE CFR	7	OPERATING (Primary Category) KIT BUILT AIRCRAFT						
			8	OPERATING LIGHT-SPORT	8A	Existing Aircraft without an airworthiness certificate & do not meet § 103.1						
			8B	Operating Light-Sport Kit-Built								
			8C	Operating light-sport previously issued special light-sport category airworthiness certificate under § 21.190								
	8	SPECIAL FLIGHT PERMIT (Indicate operation(s) to be conducted, then complete Section VI or VII as applicable on reverse side)	1	FERRY FLIGHT FOR REPAIRS, ALTERATIONS, MAINTENANCE, OR STORAGE								
2			EVACUATION FROM AREA OF IMPENDING DANGER									
3			OPERATION IN EXCESS OF MAXIMUM CERTIFICATED TAKE-OFF WEIGHT									
4			DELIVERING OR EXPORTING	5	PRODUCTION FLIGHT TESTING							
6			CUSTOMER DEMONSTRATION FLIGHTS									
C	6	MULTIPLE AIRWORTHINESS CERTIFICATE (check ABOVE "Restricted Operation" and "Standard" or "Limited" as applicable)										

III. OWNER'S CERTIFICATION	A. REGISTERED OWNER (As shown on certificate of aircraft registration)		IF DEALER, CHECK HERE	
	NAME Defense Technologies, Inc.		ADDRESS 21795 North Shungri-La Drive Lexington Park, MD 20653	
	B. AIRCRAFT CERTIFICATION BASIS (Check applicable blocks and complete items as indicated)			
	AIRCRAFT SPECIFICATION OR TYPE CERTIFICATE DATA SHEET (Give No. and Revision No.) N/A		AIRCRAFT LISTING (Give page number(s)) N/A	
	AIRCRAFT SPECIFICATION OR TYPE CERTIFICATE DATA SHEET (Give No. and Revision No.) N/A		AIRCRAFT LISTING (Give page number(s)) N/A	
	C. AIRCRAFT OPERATION AND MAINTENANCE RECORDS			
✓	CHECK IF RECORDS IN COMPLIANCE WITH 14 CFR Section 91.417	TOTAL AIRFRAME HOURS 15.65	3	EXPERIMENTAL ONLY (Enter hours flown since last certificate issued or renewed) 1.38
D. CERTIFICATION - I hereby certify that I am the registered owner (or his agent) of the aircraft described above, that the aircraft is registered with the Federal Aviation Administration in accordance with Title 49 of the United States Code 44101 et seq. and applicable Federal Aviation Regulations, and that the aircraft has been inspected and is airworthy and eligible for the airworthiness certificate requested.				
DATE OF APPLICATION January 7, 2010		NAME AND TITLE (Print or type) Donald R. Jackson, Senior Vice President		SIGNATURE

IV. INSPECTION AGENCY VERIFICATION	A. THE AIRCRAFT DESCRIBED ABOVE HAS BEEN INSPECTED AND FOUND AIRWORTHY BY: (Complete the section only if 14 CFR part 21.183(b) applies.			
	2	14 CFR part 121 CERTIFICATE HOLDER (Give Certificate No.)	3	CERTIFICATED MECHANIC (Give Certificate No.)
	5	AIRCRAFT MANUFACTURER (Give name or firm)	6	CERTIFICATED REPAIR STATION (Give Certificate No.)
	DATE TITLE SIGNATURE			

V. FAA REPRESENTATIVE CERTIFICATION	(Check ALL applicable block items A and B)		✓	THE CERTIFICATE REQUESTED
	A. I find that the aircraft described in Section I or VII meets requirements for		4	AMENDMENT OR MODIFICATION OF CURRENT AIRWORTHINESS CERTIFICATE
	B. Inspection for a special permit under Section VII was conducted by:		FAA INSPECTOR	FAA DESIGNEE
	DATE 1/7/2010		CERTIFICATE HOLDER UNDER MIDO/FSDO Office ANE-MIDO-44	14 CFR part 65 14 CFR part 121 OR 135 14 CFR part 145
DESIGNEE'S SIGNATURE AND NO.		FAA INSPECTOR'S SIGNATURE HENRY K. LOOPER		



VI. PRODUCTION FLIGHT TESTING	A. MANUFACTURER			
	NAME		ADDRESS	
	B. PRODUCTION BASIS <i>(Check applicable item)</i>			
		PRODUCTION CERTIFICATE <i>(Give production certificate number)</i> _____		
		TYPE CERTIFICATE ONLY		
VII. SPECIAL FLIGHT PERMIT PURPOSES OTHER THAN PRODUCTION FLIGHT TEST	APPROVED PRODUCTION INSPECTION SYSTEM			
	C. GIVE QUANTITY OF CERTIFICATES REQUIRED FOR OPERATING NEEDS			
	DATE OF APPLICATION		NAME AND TITLE <i>(Print or Type)</i>	
			SIGNATURE	
	A. DESCRIPTION OF AIRCRAFT			
	REGISTERED OWNER		ADDRESS	
	BUILDER <i>(Make)</i>		MODEL	
	SERIAL NUMBER		REGISTRATION MARK	
	B. DESCRIPTION OF FLIGHT			
	FROM		TO	
VIA		DEPARTURE DATE		
		DURATION		
C. CREW REQUIRED TO OPERATE THE AIRCRAFT AND ITS EQUIPMENT				
PILOT		CO-PILOT		
		FLIGHT ENGINEER		
		OTHER <i>(Specify)</i>		
D. THE AIRCRAFT DOES NOT MEET THE APPLICABLE AIRWORTHINESS REQUIREMENTS AS FOLLOWS:				
E. THE FOLLOWING RESTRICTIONS ARE CONSIDERED NECESSARY FOR SAFE OPERATION: <i>(Use attachment if necessary)</i>				
F. CERTIFICATION – I hereby certify that I am the registered owner (or his agent) of the aircraft described above; that the aircraft is registered with the Federal Aviation Administration in accordance with Title 49 of the United States Code 44101 et seq. and applicable Federal Aviation Regulations; and that the aircraft has been inspected and is safe for the flight described.				
DATE		NAME AND TITLE <i>(Print or Type)</i>		
		SIGNATURE		
VIII. AIRWORTHINESS DOCUMENTATION (FAA DESIGNEE use only)	✓ A. Operating Limitations and Markings in Compliance with 14 CFR Section 91.9, as applicable.		G. Statement of Conformity, FAA Form 8130-9 <i>(Attach when required)</i>	
	✓ B. Current Operating Limitations Attached		H. Foreign Airworthiness Certification for Import Aircraft <i>(Attach when required)</i>	
	✓ C. Data, Drawings, Photographs, etc. <i>(Attach when required)</i>		I. Previous Airworthiness Certificate Issued in Accordance with 14 CFR Section <u>21.191a, c, f</u> CAR _____ <i>(Original Attached)</i>	
	✓ D. Current Weight and Balance Information Available in Aircraft		✓ J. Current Airworthiness Certificate Issued in Accordance with 14 CFR Section <u>21.191a, c, f</u> _____ <i>(Copy Attached)</i>	
	E. Major Repair and Alteration, FAA Form 337 <i>(Attach when required)</i>		K. Light-Sport Aircraft Statement of Compliance, FAA Form 8130-15 <i>(Attach when required)</i>	
	F. This inspection Recorded in Aircraft Records			

UNITED STATES OF AMERICA
DEPARTMENT OF TRANSPORTATION - FEDERAL AVIATION ADMINISTRATION
SPECIAL AIRWORTHINESS CERTIFICATE

A	CATEGORY/DESIGNATION EXPERIMENTAL	
	PURPOSE Research & Development, Market Survey, Crew Trg.	
B	MANUFACTURER	NAME N/A
		ADDRESS N/A
C	FLIGHT	FROM N/A
		TO N/A
D	N-2554V	
	BUILDER Defense Technologies, Inc.	
E	SERIAL NO. 003	
	MODEL Kestral - T	
	DATE OF ISSUANCE January 2, 2010	
E	EXPIRY January 6, 2011	
	OPERATING LIMITATIONS DATED 01/01/10	
	ARE PART OF THIS CERTIFICATE	
E	SIGNATURE OF FAA REPRESENTATIVE Henry K. Cooper	
	DESIGNATION OR OFFICE NO. ANE-MIDO-44	

Any alteration, reproduction or misuse of this certificate may be punishable by a fine not exceeding \$1,000 or imprisonment not exceeding 3 years, or both. THIS CERTIFICATE MUST BE DISPLAYED IN THE AIRCRAFT IN ACCORDANCE WITH APPLICABLE TITLE 14, CODE OF FEDERAL REGULATIONS (CFR).

A	This airworthiness certificate is issued under the authority of Public Law 104-6, 49 United States Code (USC) 44704 and Title 14 Code of Federal Regulations (CFR).
B	The airworthiness certificate authorizes the manufacturer named on the reverse side to conduct production flight tests, and only production flight tests, of aircraft registered in his name. No person may conduct production flight tests under this certificate: (1) Carrying persons or property for compensation or hire; and/or (2) Carrying persons not essential to the purpose of the flight.
C	This airworthiness certificate authorizes the flight specified on the reverse side for the purpose shown in Block A.
D	This airworthiness certificate certifies that as of the date of issuance, the aircraft to which issued has been inspected and found to meet the requirements of the applicable CFR. The aircraft does not meet the requirements of the applicable comprehensive and detailed airworthiness code as provided by Annex 8 to the Convention On International Civil Aviation. No person may operate the aircraft described on the reverse side: (1) except in accordance with the applicable CFR and in accordance with conditions and limitations which may be prescribed by the Administrator as part of this certificate; (2) over any foreign country without the special permission of that country.
E	Unless sooner surrendered, suspended, or revoked, this airworthiness certificate is effective for the duration and under the conditions prescribed in 14 CFR, Part 21, Section 21.181 or 21.217.



New Cumberland Manufacturing Inspection District Office
Bldg. 201, Rm. 102,
400 Airport Road
New Cumberland, PA 17070-3419

Operating Limitations
Experimental: Research and Development, Market Survey,
and/or Crew Training

Registered Owner Name: Defense Technologies, Inc.	Year Manufactured: 2006
Registered Owner Address: 21795 Shangri-La Dr Lexington Park Maryland 20653	Aircraft Serial Number: 003
Aircraft Description: Kestrel-T: Giant Scale Rc Size Standard Wing And Tail Configuration Tricycle Gear Configuration	Aircraft Model Designation: Kestrel – T
Aircraft Registration: N2554V	Engine: RCS 180
Aircraft Builder: Defense Technologies, Inc.	Propeller: Bambula 20 x 8 wood

COPY

The following conditions and limitations apply to all unmanned aircraft system (UAS) flight operations for the Kestrel – T, RCS 180 while operating in the National Airspace System (NAS).

1. General Information.

a. Integrated system. For the purposes of this special airworthiness certificate and operating limitations, the Kestrel – T, RCS 180 operated by Defense Technologies, Inc., is considered to be an integrated system. The system is composed of the following:

- (1) Kestrel – T, RCS 180, serial number 003,
- (2) UAS control station(s), that is, fixed, mobile, ground-based, or airborne.
- (3) Telemetry, launch, and recovery equipment.

(4) Communications and navigation equipment, including ground and/or airborne equipment used for command and control of the Kestrel – T, RCS 180.

(5) Ground or airborne equipment used for communication with the chase aircraft, other members of the flight crew, observers, air traffic control (ATC), and other users of the NAS.

b. Compliance with 14 CFR part 61 (Certification: Pilots, Flight Instructors, and Ground Instructors) and part 91 (General Operating and Flight Rules). Unless otherwise specified in this document, the UA pilot-in-command (PIC) and Defense Technologies, Inc., must comply with all applicable sections and parts of 14 CFR including, but not limited to, parts 61 and 91.

c. Operational requirements.

(1) No person may operate this UAS for other than the purpose of research and development, market survey, and/or crew training, to accomplish the flight operation outlined in Defense Technologies, Inc., program letter dated 12/30/2009, Rev. 2.5, which describes compliance with § 21.193(d), Experimental certificates: General, and has been made available to the UA PIC.

(2) This UAS must be operated in accordance with applicable air traffic and general operating rules of part 91 and all additional limitations herein prescribed under the provisions of § 91.319(i), Aircraft having experimental certificates: Operating limitations.

(3) Defense Technologies, Inc., must accumulate at least 50 flight hours under its experimental airworthiness certificate before customer crew training is permitted, in accordance with § 21.195(d), Experimental certificates: Aircraft to be used for market surveys, sales demonstrations, and customer crew training.

d. UA condition. The UA PIC must determine that the UA is in a condition for safe operation, and in a configuration appropriate for the purpose of the intended flight.

e. Multiple-purpose operations. When changing between operating purposes of a multiple purpose certificate, the operator must determine that the aircraft is in a condition for safe operation and appropriate for the purpose intended. A record entry will be made by an appropriately rated person (that is, an individual authorized by the applicant and acceptable to the FAA) to document that finding in the maintenance records.

f. Operation exceptions. No person may operate this UA to carry property for compensation or hire (§ 91.319(a)(2)).

g. UA markings.

(1) This UA must be marked with its U.S. registration number in accordance with part 45 or alternative marking approval issued by the FAA Production and Airworthiness Division, AIR-200.

(2) This UA must display the word *Experimental* in accordance with § 45.23(b), Display of marks, unless otherwise granted an exemption from this requirement.

h. Required documentation. Before conducting the initial flight of the Kestrel – T, RCS 180, Defense Technologies, Inc., must forward a copy of the Kestrel – T, RCS 180 program letter, special airworthiness certificate, and operating limitations to the following personnel:

(1) Peter Acevedo, FAA Air Traffic Representative, Eastern Service Center, System Support, 1701 Columbia Ave, College Park, GA 30337, telephone (404) 305-5598, email peter.k.acevedo@faa.gov.

(2) Richard Posey, Aviation Safety Inspector, Production and Airworthiness Division, AIR-200, 800 Independence Ave, SW, Washington, DC 20591, telephone (202) 267-9538, email richard.posey@faa.gov.

i. Change in registrant address. Section 47.45, Change of address, requires that the FAA Aircraft Registry be notified within 30 days of any change in the aircraft registrant's address. Such notification is to be made by providing AC Form 8050-1, Aircraft Registration Application, to the FAA Aircraft Registration Branch (AFS-750) in Oklahoma City, Oklahoma.

j. Certificate display and manual availability. The airworthiness and registration certificates must be displayed, and the aircraft flight manual must be available to the pilot, as prescribed by the applicable sections of 14 CFR, or as prescribed by an exemption granted in accordance with 14 CFR part 11, Investigative and Enforcement Procedures, to Defense Technologies, Inc.

2. Program Letter. The Kestrel – T, RCS 180 program letter, dated 12/30/2009, Rev.2.5, will be used as a basis for determining the operating limitations prescribed in this document. All flight operations must be conducted in accordance with the provisions of this document.

3. Initial Flight Testing.

a. Requirements. Flight operations must be conducted within visual line of sight of the pilot/observer. Initial flight testing must be completed upon accumulation of 25 flight hours. Following satisfactory completion of initial flight testing, the operations manager or chief pilot must certify in the records that the aircraft has been shown to comply with § 91.319(b). Compliance with § 91.319(b) must be recorded in the aircraft records with the following, or a similarly worded, statement:

I certify that the prescribed flight test hours have been completed and the aircraft is controllable throughout its normal range of speeds and throughout all maneuvers to be executed, has no hazardous operating characteristics or design features, and is safe for operation. The following aircraft operating data has been demonstrated during the flight testing: speeds Vx _____, and Vy _____, and the weight _____ and CG location _____ at which they were obtained.

b. Aircraft operations for the purpose of market surveys, sales demonstrations, and customer crew training. These operations cannot be performed until 50 flight

hours have been accomplished. An entry in the maintenance records is required as evidence of compliance.

4. Authorized Flight Operations Area.

a. **Description of the authorized flight operations area.** The flight operations area is located in Clements, MD. Clements Field, 4MD4 is a private airport located at:

Latitude 38° 20.408N
Longitude 76° 44.432W

b. **Flight test area.** The flight operations area authorized for the UA will be referred to as the flight test area, and is depicted graphically below.

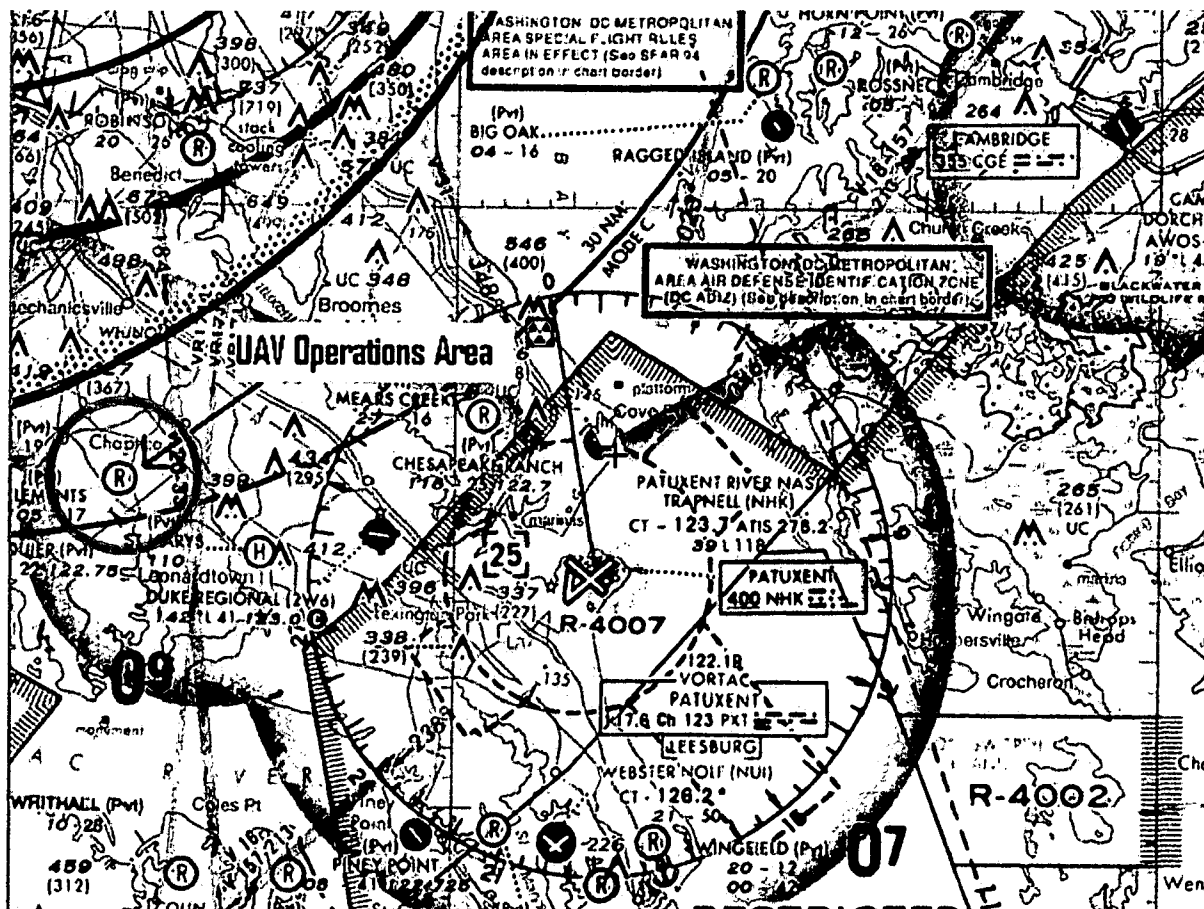


Figure 1. Aeronautical Chart

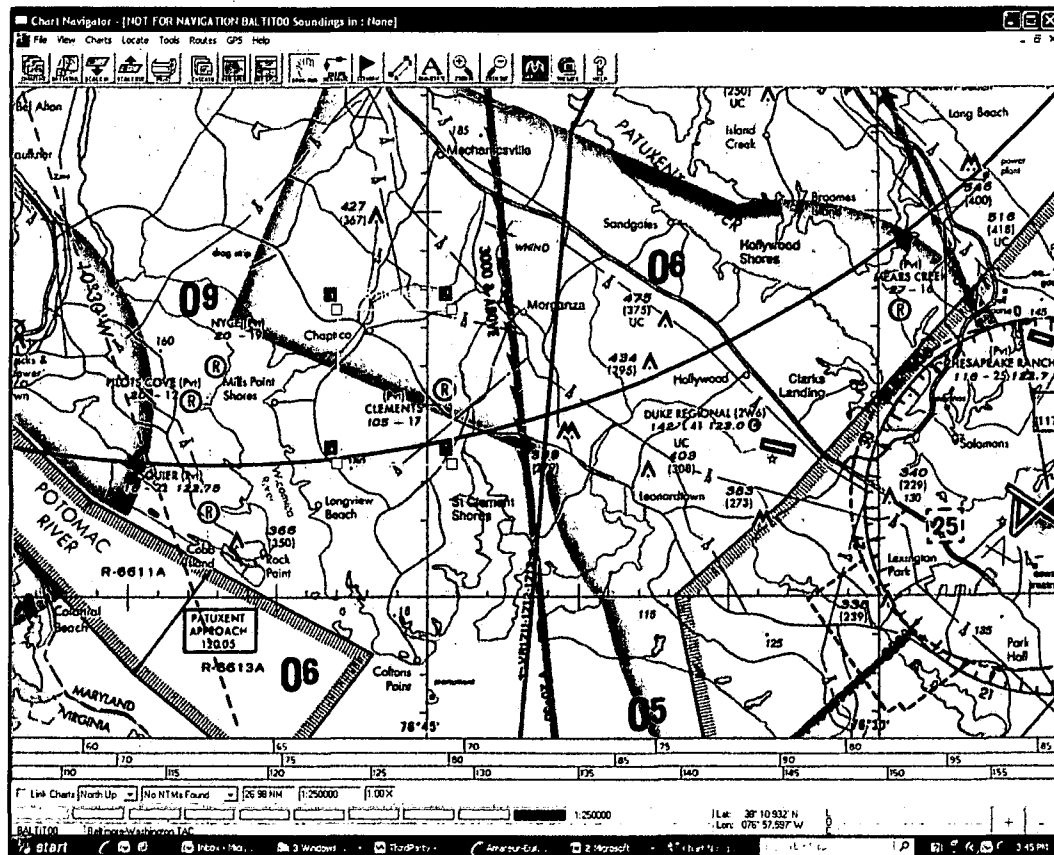


Figure 2. Kestrel – T Flight Test Area

Waypoints for Proposed Kestrel-T Experimental Flight Box - 4MD4 Operations		
Point Name	Latitude	Longitude
Point 1	38° 18.418' N	076° 44.136' W
Point 2	38° 22.440' N	076° 44.153' W
Point 3	38° 22.448' N	076° 47.988' W
Point 4	38° 18.447' N	076° 47.967' W

c. Authorized flight times and conditions. All flight operations must be conducted during daylight hours under visual flight rules (VFR). Potomac TRACN (PCT) will NOT be requiring VHF/UHF monitoring or communication. The following conditions will be included in your operating limitations.

- (1) Operations shall be conducted below 1000 MSL.
- (2) Flight operations shall be contained in an area west of 4MD4. The primary containment area is identified as being 2nm north, 2nm south, and 3nm west of the airport as identified in Figure 2 above. All flight operations must remain clear of the ADIZ.
- (3) The UAS PIC must notify the PCT TRACON Operations Manager

at (540) 349-7541 and PAX River NAS at (301) 342-3740 at least 30 minutes prior to launch and immediately upon termination of operations each day. DTI must provide PCT with an on-site contact name and phone number for two-way communications with ATC for each flight.

(4) The Kestrel UAS shall transmit the assigned beacon code 0377 and altitude information (Mode-C) for the duration of the flight. Any failure of the transponder or inability to properly squawk the assigned code shall be reported to PCT and flight operations shall be terminated.

(5) The Kestrel pilot shall have the capability of maneuvering the UAS or suspending operations as instructed by PCT.

(6) At no time will the external pilot conduct his/her duties more than 1 mile laterally or 1000 ft vertically from the UA.

(7) A Notice to Airmen (NOTAM) shall be issued when UAS operations are being conducted. (Note: Do not use 'distant' or D here as the NOTAM classification and codes have recently been changed.) DTI shall contact the Automated Flight Service Station (FSS) no less than 48 hours prior to the operation and provide:

- i) Name, address, and telephone number of the person giving notice.
- ii) Nature of the activity.
- iii) Date, time, and duration of the activity.
- iv) Size of the affected area in nautical mile radius and affected altitudes.
- v) Location of center of affected area in relation to airport.
- vi) Location of center of affected area in relation to nearest VOR/DME or VORTAC.

d. Criteria for remaining in the flight test area. The UAS PIC must ensure all UA flight operations remain within the lateral and vertical boundaries of the flight test area. Furthermore, the UAS PIC must take into account all factors that may affect the capability of the UA to remain within the flight test area. This includes, but is not limited to, considerations for wind, gross weight, and glide distances.

e. Incident/accident reporting. Any incident/accident and any flight operation that transgresses the lateral or vertical boundaries of the flight test area or any restricted airspace must be reported to the FAA within 24 hours. This information must be reported to the Unmanned Aircraft Program Office, AIR-160. AIR-160 can be reached by telephone at 202-385-4636 and fax at 202-385-4651. Accidents must be reported to the National Transportation Safety Board (NTSB) per instructions contained on the NTSB Web site: www.nts.gov. Further flight operations must not be conducted until the incident is reviewed by AIR-160 and authorization to resume operations is provided to DTI.

5. UA Pilots and Observers.

a. UA PIC roles and responsibilities.

- (1) The UA PIC must perform crew duties for only one UA at a time.
- (2) All flight operations must have a designated UA PIC. The UA PIC has responsibility over each flight conducted and is accountable for the UA flight operation.

(3) The UA PIC is responsible for the safety of the UA as well as persons and property along the UA flight path. This includes, but is not limited to, collision avoidance and the safety of persons and property in the air and on the ground.

(4) The UA PIC must avoid densely populated areas (§ 91.319) and exercise increased vigilance when operating within or in the vicinity of published airway boundaries.

b. UA PIC certification and ratings requirements.

(1) The UA PIC must hold and be in possession of, at a minimum, an FAA private pilot certificate, with either an airplane, rotorcraft, or powered-lift category; and single- or multiengine class ratings appropriate to the type of UA being operated.

(2) The UA PIC must have and be in possession of a valid second-class (or higher) airman medical certificate issued under 14 CFR part 67, Medical Standards and Certification.

c. UA PIC currency, flight review, and training.

(1) No person may act as pilot in command of an unmanned aircraft unless that person has made at least three takeoffs and three landings in manned aircraft within the preceding 90 days acting as the sole manipulator of the flight controls.

(2) The UA PIC must have a flight review in manned aircraft every 24 calendar months in accordance with § 61.56, Flight review.

(3) The UA PIC must maintain currency in unmanned aircraft in accordance with (applicant name) company procedures.

(4) The UA PIC must have a flight review in unmanned aircraft every 24 calendar months in accordance with Defense Technologies, Inc., procedures.

(5) All UA PICs must have successfully completed applicable (applicant name) training for the UAS.

d. Supplemental UA pilot roles and responsibilities.

(1) Any additional UA pilot(s) assigned to a crew station during UA flight operations will be considered a supplemental UA pilot.

(2) A supplemental UA pilot assists the PIC in the operation of the UA and may do so at the same or a different control station as the PIC. The UA PIC will have operational override capability over any supplemental UA pilots, regardless of position.

(3) A supplemental UA pilot must perform crew duties for only one UA at a time.

e. Supplemental UA pilot certification. The supplemental UA PIC need not be a certificated pilot, but must have successfully completed a recognized private pilot ground school program.

f. Supplemental UA pilot currency, flight review, and training.

(1) All UA pilots must maintain currency in unmanned aircraft in accordance with (applicant name) company procedures.

(2) All UA pilots must have a flight review in unmanned aircraft every 24 calendar months in accordance with Defense Technologies, Inc., procedures.

(3) All UA pilots must have successfully completed applicable Defense Technologies, Inc., training for the UAS.

g. Observer roles and responsibilities. The task of the observer is to provide the UA PIC(s) with instructions to maneuver the UA clear of any potential collision with other traffic. To satisfy these requirements—

(1) The observer must perform crew duties for only one UA at a time.

(2) At no time will the observer permit the UA to operate beyond the line-of-sight necessary to ensure maneuvering information can be reliably determined.

(3) At no time will the observer conduct his/her duties more than 1000 ft laterally or 1000 ft vertically from the UA.

(4) An observer must maintain continuous visual contact with the UA to discern UA attitude and trajectory in relation to conflicting traffic.

(5) An observer may be positioned in a chase aircraft. When a chase aircraft is used, it must maintain a reasonable proximity, and must position itself relative to the UA to reduce the hazard of collision in accordance with § 91.111, Operating near other aircraft. When the observer is located in a chase aircraft, the observer's duties must be dedicated to the task of observation only. Concurrent duty as pilot of the chase aircraft is not authorized.

(6) Observers must continually scan the airspace for other aircraft that pose a potential conflict.

(7) All flight operations conducted in the flight test area must have an observer to perform traffic avoidance and visual observation to fulfill the see-and-avoid requirement of § 91.113, Right-of-way rules: Except water operations.

h. Observer certification.

(1) All observers must either hold, at a minimum, an FAA private pilot license or military equivalent, or must have successfully completed specific observer training acceptable to the FAA. An observer does not require currency as a pilot.

(2) All observers must have in their possession a valid third-class (or higher) airman medical certificate issued under part 67. A valid second-class airman medical certificate is required after 9/10/2008.

i. Observer training.

(1) All observers must be thoroughly trained, be familiar with, and possess operational experience with the equipment being used. Such training is necessary for observation and detection of other aircraft for collision avoidance purposes as outlined in Defense Technologies, Inc., program letter.

(2) All observers must have successfully completed applicable Defense Technologies, Inc., training for the UAS.

6. Equipage.

a. The UAS must be equipped with an operable transponder with Mode C or Mode S, and two-way communications equipment allowing communications between the UA pilot, chase aircraft, observers, all UAS control stations.

b. The UA and chase aircraft must be equipped with operable navigation, position, and/or strobe/anti-collision lights. Strobe/anti-collision lights must be illuminated during all operations.

7. Communications.

a. **Before UA flights.** Before conducting operations, the frequency spectrum used for operation and control of the UA must be approved by the Federal Communications Commission or other appropriate government oversight agency.

b. During UA flights.

(1) Appropriate air traffic frequencies must be monitored during flight operations.

(2) All UA positions must maintain two-way communications with each other during all operations. If unable to maintain two-way communication, the UA PIC will expeditiously return the UA to its base of operations while remaining within the flight test area and conclude the flight operation.

8. Flight Conditions.

a. **Daylight operations.** All flight operations must be conducted during daylight hours in visual meteorological conditions (VMC), including cloud clearance minimums as specified in § 91.155, Basic VFR weather minimums. Flight operation in instrument meteorological conditions (IMC) is not permitted.

b. Prohibitions.

(1) The UA is prohibited from aerobatic flight, that is, an intentional maneuver involving an abrupt change in the UA's attitude, an abnormal acceleration, or other flight action not necessary for normal flight. (See § 91.303, Aerobatic flight.)

(2) Flight operations must not involve carrying hazardous material or the dropping of any objects or external stores.

(3) Each UA must be operated by only one control station at a time. A control station may not be used to operate multiple UAS.

c. Transponder requirements.

(1) The UA must operate an approved operational Mode C or Mode S altitude encoding transponder during all flight operations.

(2) Chase aircraft transponders must be on standby while performing chase operations flight with the UA.

d. Transponder failure.

(1) In the event of transponder failure on either the UA or the chase aircraft, the UA must conclude all flight operations and expeditiously return to its base of operations within the prescribed limitations of this authorization.

(2) In the event of UA transponder failure, a chase aircraft will operate its transponder in Mode C.

e. Notice to airman. Defense Technologies, Inc., must request the issuance of a Notice to Airman (NOTAM) through the Automated Flight Service Station at least 24 hours before flight operation.

9. Flight Termination and Lost Link Procedures.

a. Flight termination. In accordance with Defense Technologies, Inc., program letter, Rev. 2.5, dated 12/30/09, flight termination must be initiated at any point that safe operation of the UA cannot be maintained or if hazard to persons or property is imminent.

b. Lost link procedures. In the event of lost link, the UA must provide a means of automatic recovery that ensures airborne operations are predictable and that the UA remains within the flight test area. The chase aircraft or observer, all other UAS control stations, and the appropriate ATC facility will be immediately notified of the lost link condition and the expected UA response.

10. Maintenance and Inspection. (Ref.: DTI-UAS-MAIN-INSP-01, Kestral-T UAS Maintenance and Inspection Policy, Rev. 2.3, 12/28/2009, AEA-FSDO-27-accepted 12/30/2009)

a. General requirements. The UAS must not be operated unless it is inspected and maintained in accordance with the Defense Technologies, Inc., Kestral-T UAS, Daily Aircraft Condition Inspection Checklist, Rev. 2.3, dated 12/28/09, reportable on the Aircraft Discrepancy Form, Rev. 2.3, dated 12/28/09, and Daily Ground Station Condition Inspection Checklist, Rev. 2.3, dated 12/28/09, reportable on the Ground Station Discrepancy Form, Rev. 2.3, dated 12/28/09, or later accepted FAA revision. Defense Technologies, Inc., must establish and maintain aircraft maintenance records (see paragraph 10(d) below).

b. Inspections. No person may operate this UAS within the preceding 12 calendar months unless it has had a condition inspection performed according to the Defense Technologies, Inc., Kestral-T UAS, Daily Aircraft Condition Inspection Checklist, Rev. 2.3, dated 12/28/09, reportable on the Aircraft Discrepancy Form, Rev. 2.3, dated 12/28/09, and Daily Ground Station Condition Inspection Checklist, Rev. 2.3, dated 12/28/09, reportable on the Ground Station Discrepancy Form, Rev. 2.3, dated 12/28/09, or later accepted FAA revision. The UAS must also have been found to be in a condition for safe operation. This inspection will be recorded in the UAS maintenance records as described in paragraph 10(d) below.

c. Authorized inspectors. Only those individuals trained and authorized by Defense Technologies, Inc., and acceptable to the FAA may perform the inspections and maintenance required by these operating limitations.

d. Maintenance and inspection records. Maintenance and inspections of the UAS must be recorded in the UAS maintenance records. The following information must be recorded:

(1) Maintenance record entries must include a description of the work performed, the date of completion for the work, the UAS's total time-in-service, and the name and signature of the person performing the work.

(2) Inspection entries must contain the following, or a similarly worded, statement: *I certify that this UAS was inspected on (date), in accordance with the scope and detail of the Defense Technologies, Inc., Kestral-T UAS, Daily Aircraft Condition Inspection Checklist, Rev. 2.3, dated 12/28/09, reportable on the Aircraft Discrepancy Form, Rev. 2.3, dated 12/28/09, and Daily Ground Station Condition Inspection Checklist, Rev. 2.3, dated 12/28/09, reportable on the Ground Station Discrepancy Form, Rev. 2.3, dated 12/28/09, or later accepted FAA revision, and was found to be in a condition for safe operation.*

(3) UAS instruments and equipment required to be installed must be inspected and maintained in accordance with the requirements of the *Defense Technologies, Inc.* Any maintenance or inspection of this equipment must be recorded in the UAS maintenance records.

(4) No person may operate this UAS unless the altimeter system and transponder have been tested within the preceding 24 calendar months in accordance with § 91.411, Altimeter system and altitude reporting equipment tests and inspections, and § 91.413, ATC transponder tests and inspections. These inspections will be recorded in the UAS maintenance records.

11. Information Reporting. Defense Technologies, Inc., will provide the following information to Donald.E.Grampp@FAA.GOV on a monthly basis. A copy of the report shall be provided to AIR-200.

- a. Number of flights conducted under this certificate.
- b. Pilot duty time per flight.
- c. Unusual equipment malfunctions (hardware or software).
- d. Deviations from ATC instructions.
- e. Unintended entry into lost link flight mode that results in a course change.

12. Revisions and Other Provisions.

a. Experimental certificates, program letters, and operating limitations. The experimental certificate, FAA-accepted Defense Technologies, Inc., program letter, and operating limitations cannot be reissued, renewed, or revised without application being

made to the New Cumberland Manufacturing Inspection District Office MIDO, in coordination with AIR-200. AIR-200 will be responsible for FAA Headquarters internal coordination with the Aircraft Certification Service, Flight Standards Service, Air Traffic Organization, Office of the Chief Council, and Office of Rulemaking.

b. Certificates of waiver or authorization. DTI shall immediately notify the Production and Airworthiness Division, AIR-200, and the New Cumberland MIDO, if there is any plan for requesting a Certificate of Authorization or Waiver (COA) for UAS operations during the time the experimental certificate is in effect. An entry in the aircraft logbook is required to document that the aircraft flight authority has been changed from the experimental certificate to COA. When COA operations are concluded and the aircraft resumes flying under the experimental certificate, a record entry will be made in the aircraft logbook by an appropriately rated person to document that the aircraft is in a condition for safe operation and appropriately configured.

c. Amendments and cancellations. The provisions and limitations annotated in this operational approval may be amended or cancelled at any time as deemed necessary by the FAA.

d. Reviews of revisions. (Ref.: DTI-UAS-MAIN-INSP-01, Kestral-T UAS Maintenance and Inspection Policy, Rev. 2.3, dated 12/28/09, AEA-FSDO-27-accepted 12/30/09)

All revisions to Defense Technologies, Inc., Kestral-T UAS UAS Maintenance and Inspection Policy, Rev. 2.3, dated 12/28/09, AEA-FSDO-27-accepted 12/30/09, Daily Aircraft Condition Inspection Checklist, Rev. 2.3, dated 12/28/09, reportable on the Aircraft Discrepancy Form, Rev. 2.3, dated 12/28/09, and Daily Ground Station Condition Inspection Checklist, Rev. 2.3, dated 12/28/09, reportable on the Ground Station Discrepancy Form, Rev. 2.3, dated 12/28/09, must be reviewed and accepted by the Washington Flight Standards District Office (FSDO).

13. UAS Modifications.

a. Software and system changes. All software and system changes will be documented as part of the normal maintenance procedures and will be available for inspection. All software and system changes must be inspected and approved per Defense Technologies, Inc., Kestral-T UAS, Daily Aircraft Condition Inspection Checklist, Rev. 2.3, dated 12/28/09, reportable on the Aircraft Discrepancy Form, Rev. 2.3, dated 12/28/09, and Daily Ground Station Condition Inspection Checklist, Rev. 2.3, dated 12/28/09, reportable on the Ground Station Discrepancy Form, Rev. 2.3, dated 12/28/09, or later accepted FAA revision. All software changes to the aircraft and control station are categorized as major changes, and must be provided in summary form at the time they are incorporated.

b. Major modifications. All major modifications, whether performed under the experimental certificate, COA, or other authorizations, that could potentially affect the safe operation of the system, must be documented and provided to the FAA before operating the aircraft under this certificate. Major modifications incorporated under COA or other

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authorization needs to be provided only if the aircraft is flown under these authorizations during the effective period of the experimental certificate.

c. Submission of modifications. All information requested must be provided to AIR-200.

End of Limitations



Henry K. Cooper
Senior Aviation Safety Inspector
New Cumberland Manufacturing Inspection District Office
Bldg. 201, Rm. 102,
400 Airport Road
New Cumberland, PA 17070-3419

JANUARY 7, 2010

Issuance Date:

I certify that I have read and understand the operating limitations and conditions that are a part of the special airworthiness certificate, FAA Form 8130-7, issued on _____, for the purposes of research and development, market survey, and/or crew training. This special airworthiness certificate is issued for Kestrel – T, RCS 180, serial number 003, registration number N2554V.

Robert J. Mudd Jr. for Don Jackson
Applicant (signature)

01/07/2010
Date:

Name (Printed): Donald Jackson

Title: Senior Vice President

Company: Defense Technologies, Inc.

UNITED STATES OF AMERICA
DEPARTMENT OF TRANSPORTATION - FEDERAL AVIATION ADMINISTRATION
SPECIAL AIRWORTHINESS CERTIFICATE

A	CATEGORY/DESIGNATION EXPERIMENTAL (UNMANNED AIRCRAFT)	
	PURPOSE Research & Development, Market Survey, Crew Tng.	
B	MANUFACTURER	NAME N/A
		ADDRESS N/A
C	FLIGHT	FROM N/A
		TO N/A
D	N-2554V	
	BUILDER Defense Technologies, Inc.	
	SERIAL NO. 003	MODEL Kestral -T
	DATE OF ISSUANCE January 9, 2009	EXPIRY January 8, 2010
E	OPERATING LIMITATIONS DATED 01/09/09	
	ARE PART OF THIS CERTIFICATE	
	SIGNATURE OF FAA REPRESENTATIVE <i>Henry K. Cooper</i> Henry K. Cooper	DESIGNATION OR OFFICE NO. ANE-MIDO-44

Any alteration, reproduction or misuse of this certificate may be punishable by a fine not exceeding \$1,000 or imprisonment not exceeding 3 years, or both. THIS CERTIFICATE MUST BE DISPLAYED IN THE AIRCRAFT IN ACCORDANCE WITH APPLICABLE TITLE 14, CODE OF FEDERAL REGULATIONS (CFR).

A	This airworthiness certificate is issued under the authority of Public Law 104-6, 49 United States Code (USC) 44704 and Title 14 Code of Federal Regulations (CFR).
B	The airworthiness certificate authorizes the manufacturer named on the reverse side to conduct production flight tests, and only production flight tests, of aircraft registered in his name. No person may conduct production flight tests under this certificate: (1) Carrying persons or property for compensation or hire; and/or (2) Carrying persons not essential to the purpose of the flight.
C	This airworthiness certificate authorizes the flight specified on the reverse side for the purpose shown in Block A.
D	This airworthiness certificate certifies that as of the date of issuance, the aircraft to which issued has been inspected and found to meet the requirements of the applicable CFR. The aircraft does not meet the requirements of the applicable comprehensive and detailed airworthiness code as provided by Annex 8 to the Convention On International Civil Aviation. No person may operate the aircraft described on the reverse side: (1) except in accordance with the applicable CFR and in accordance with conditions and limitations which may be prescribed by the Administrator as part of this certificate; (2) over any foreign country without the special permission of that country.
E	Unless sooner surrendered, suspended, or revoked, this airworthiness certificate is effective for the duration and under the conditions prescribed in 14 CFR, Part 21, Section 21.181 or 21.217.



New Cumberland Manufacturing Inspection District Office
Bldg. 201, Rm. 102,
400 Airport Road
New Cumberland, PA 17070-3419

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Operating Limitations
Experimental: Research and Development, Market Survey,
and/or Crew Training

Registered Owner Name: Defense Technologies, Inc.	Year Manufactured: 2006
Registered Owner Address: 21795 Shangri-La Dr Lexington Park Maryland 20653	Aircraft Serial Number: 003
Aircraft Description: Kestrel-T: Giant Scale Rc Size Standard Wing And Tail Configuration Tricycle Gear Configuration	Aircraft Model Designation: Kestrel – T
Aircraft Registration: N2554V	Engine: RCS 180
Aircraft Builder: Defense Technologies, Inc.	Propeller: Bambula 20 x 8 wood

The following conditions and limitations apply to all unmanned aircraft system (UAS) flight operations for the Kestrel – T, RCS 180 while operating in the National Airspace System (NAS).

1. General Information.

a. Integrated system. For the purposes of this special airworthiness certificate and operating limitations, the Kestrel – T, RCS 180 operated by Defense Technologies, Inc., is considered to be an integrated system. The system is composed of the following:

- (1) Kestrel – T, RCS 180, serial number 003,
- (2) UAS control station(s), that is, fixed, mobile, ground-based, or airborne.
- (3) Telemetry, launch, and recovery equipment.

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(4) Communications and navigation equipment, including ground and/or airborne equipment used for command and control of the Kestrel – T, RCS 180.

(5) Ground or airborne equipment used for communication with the chase aircraft, other members of the flight crew, observers, air traffic control (ATC), and other users of the NAS.

b. Compliance with 14 CFR part 61 (Certification: Pilots, Flight Instructors, and Ground Instructors) and part 91 (General Operating and Flight Rules). Unless otherwise specified in this document, the UA pilot-in-command (PIC) and Defense Technologies, Inc., must comply with all applicable sections and parts of 14 CFR including, but not limited to, parts 61 and 91.

c. Operational requirements.

(1) No person may operate this UAS for other than the purpose of research and development, market survey, and/or crew training, to accomplish the flight operation outlined in Defense Technologies, Inc., program letter dated 11/25/2008, Rev. 2.3, which describes compliance with § 21.193(d), Experimental certificates: General, and has been made available to the UA PIC.

(2) This UAS must be operated in accordance with applicable air traffic and general operating rules of part 91 and all additional limitations herein prescribed under the provisions of § 91.319(i), Aircraft having experimental certificates: Operating limitations.

(3) Defense Technologies, Inc., must accumulate at least 50 flight hours under its experimental airworthiness certificate before customer crew training is permitted, in accordance with § 21.195(d), Experimental certificates: Aircraft to be used for market surveys, sales demonstrations, and customer crew training.

d. UA condition. The UA PIC must determine that the UA is in a condition for safe operation, and in a configuration appropriate for the purpose of the intended flight.

e. Multiple-purpose operations. When changing between operating purposes of a multiple purpose certificate, the operator must determine that the aircraft is in a condition for safe operation and appropriate for the purpose intended. A record entry will be made by an appropriately rated person (that is, an individual authorized by the applicant and acceptable to the FAA) to document that finding in the maintenance records.

f. Operation exceptions. No person may operate this UA to carry property for compensation or hire (§ 91.319(a)(2)).

g. UA markings.

(1) This UA must be marked with its U.S. registration number in accordance with part 45 or alternative marking approval issued by the FAA Production and Airworthiness Division, AIR-200.

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(2) This UA must display the word *Experimental* in accordance with § 45.23(b), Display of marks, unless otherwise granted an exemption from this requirement.

h. Required documentation. Before conducting the initial flight of the Kestrel – T, RCS 180, Defense Technologies, Inc., must forward a copy of the Kestrel – T, RCS 180 program letter, special airworthiness certificate, and operating limitations to the following personnel:

(1) Peter Acevedo, FAA Air Traffic Representative, Eastern Service Center, System Support, 1701 Columbia Ave, College Park, GA 30337, telephone (404) 305-5598, email peter.k.acevedo@faa.gov.

(2) Richard Posey, Aviation Safety Inspector, Production and Airworthiness Division, AIR-200, 800 Independence Ave, SW, Washington, DC 20591, telephone (202) 267-9538, email richard.posey@faa.gov.

i. Change in registrant address. Section 47.45, Change of address, requires that the FAA Aircraft Registry be notified within 30 days of any change in the aircraft registrant's address. Such notification is to be made by providing AC Form 8050-1, Aircraft Registration Application, to the FAA Aircraft Registration Branch (AFS-750) in Oklahoma City, Oklahoma.

j. Certificate display and manual availability. The airworthiness and registration certificates must be displayed, and the aircraft flight manual must be available to the pilot, as prescribed by the applicable sections of 14 CFR, or as prescribed by an exemption granted in accordance with 14 CFR part 11, Investigative and Enforcement Procedures, to Defense Technologies, Inc.

2. Program Letter. The Kestrel – T, RCS 180 program letter, dated 11/25/2008, Rev. 2.3, will be used as a basis for determining the operating limitations prescribed in this document. All flight operations must be conducted in accordance with the provisions of this document.

3. Initial Flight Testing.

a. Requirements. Flight operations must be conducted within visual line of sight of the pilot/observer. Initial flight testing must be completed upon accumulation of 25 flight hours. Following satisfactory completion of initial flight testing, the operations manager or chief pilot must certify in the records that the aircraft has been shown to comply with § 91.319(b). Compliance with § 91.319(b) must be recorded in the aircraft records with the following, or a similarly worded, statement:

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I certify that the prescribed flight test hours have been completed and the aircraft is controllable throughout its normal range of speeds and throughout all maneuvers to be executed, has no hazardous operating characteristics or design features, and is safe for operation. The following aircraft operating data has been demonstrated during the flight testing: speeds V_x _____, and V_y _____, and the weight _____ and CG location _____ at which they were obtained.

b. Aircraft operations for the purpose of market surveys, sales demonstrations, and customer crew training. These operations cannot be performed until 50 flight hours have been accomplished. An entry in the maintenance records is required as evidence of compliance.

4. Authorized Flight Operations Area.

a. Description of the authorized flight operations area. The flight operations area is located in Clements, MD. Clements Field, 4MD4 is a private airport located at:

Latitude 38° 20.408N
Longitude 76° 44.432W

b. Flight test area. The flight operations area authorized for the UA will be referred to as the flight test area, and is depicted graphically below.

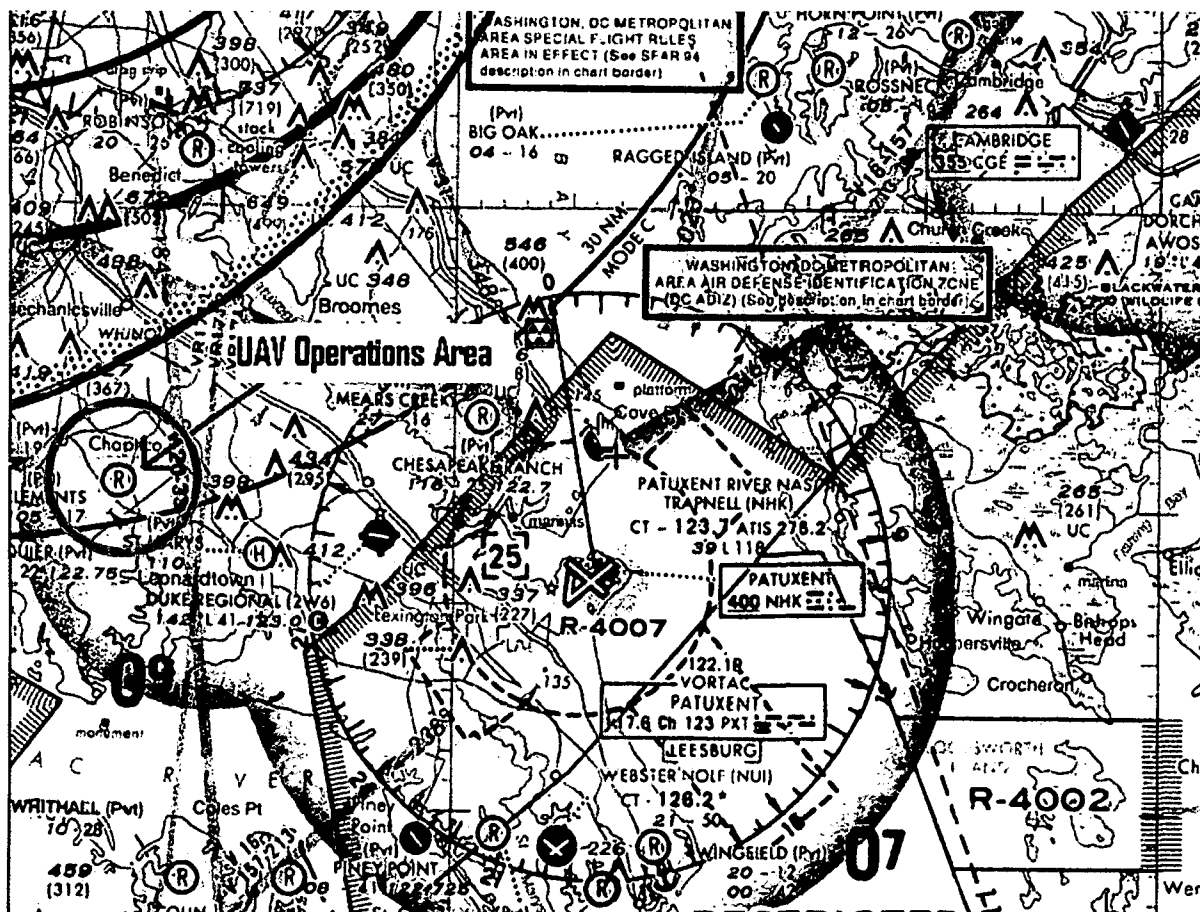


Figure 1. Aeronautical Chart

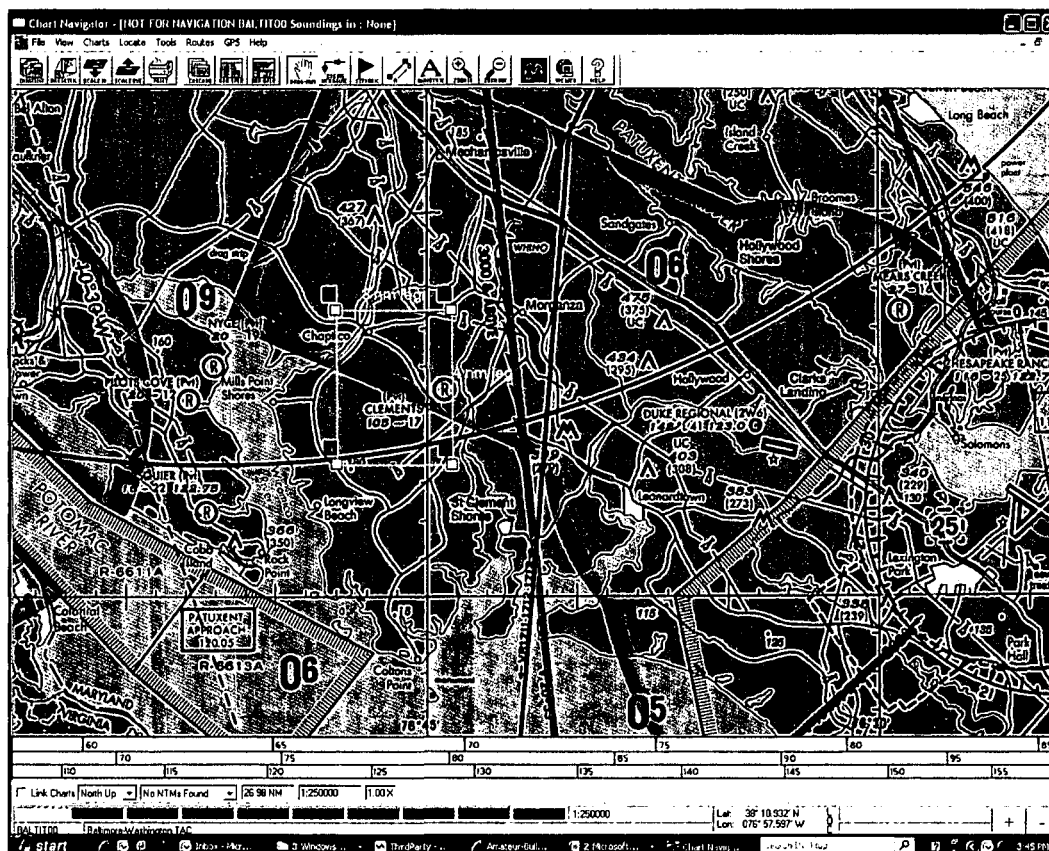


Figure 2. Kestrel – T Flight Test Area

Waypoints for Proposed Kestrel-T Experimental Flight Box - 4MD4 Operations		
Point Name	Latitude	Longitude
Point 1	38° 18.418' N	076° 44.136' W
Point 2	38° 22.440' N	076° 44.153' W
Point 3	38° 22.448' N	076° 47.988' W
Point 4	38° 18.447' N	076° 47.967' W

c. Authorized flight times and conditions. All flight operations must be conducted during daylight hours under visual flight rules (VFR). Potomac TRACN (PCT) will NOT be requiring VHF/UHF monitoring or communication. The following conditions will be included in your operating limitations.

- (1) Operations shall be conducted below 1000 MSL.

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(2) Flight operations shall be contained in an area west of 4MD4. The primary containment area is identified as being 2nm north, 2nm south, and 3nm west of the airport as identified in Figure 2 above. All flight operations must remain clear of the ADIZ.

(3) The UAS PIC must notify the PCT TRACON Operations Manager at (540) 349-7541 and PAX River NAS at (301) 342-3740 at least 30 minutes prior to launch and immediately upon termination of operations each day. DTI must provide PCT with an on-site contact name and phone number for two-way communications with ATC for each flight.

(4) The Kestrel UAS shall transmit the assigned beacon code 0377 and altitude information (Mode-C) for the duration of the flight. Any failure of the transponder or inability to properly squawk the assigned code shall be reported to PCT and flight operations shall be terminated.

(5) The Kestrel pilot shall have the capability of maneuvering the UAS or suspending operations as instructed by PCT.

(6) At no time will the external pilot conduct his/her duties more than 1 mile laterally or 1000 ft vertically from the UA.

(7) A Notice to Airmen (NOTAM) shall be issued when UAS operations are being conducted. (Note: Do not use 'distant' or D here as the NOTAM classification and codes have recently been changed.) DTI shall contact the Automated Flight Service Station (FSS) no less than 48 hours prior to the operation and provide:

- i) Name, address, and telephone number of the person giving notice.
- ii) Nature of the activity.
- iii) Date, time, and duration of the activity.
- iv) Size of the affected area in nautical mile radius and affected altitudes.
- v) Location of center of affected area in relation to airport.
- vi) Location of center of affected area in relation to nearest VOR/DME or VORTAC.

d. Criteria for remaining in the flight test area. The UAS PIC must ensure all UA flight operations remain within the lateral and vertical boundaries of the flight test area. Furthermore, the UAS PIC must take into account all factors that may affect the capability of the UA to remain within the flight test area. This includes, but is not limited to, considerations for wind, gross weight, and glide distances.

e. Incident/accident reporting. Any incident/accident and any flight operation that transgresses the lateral or vertical boundaries of the flight test area or any restricted airspace must be reported to the FAA within 24 hours. This information must be reported to the Unmanned Aircraft Program Office, AIR-160. AIR-160 can be reached by telephone at 202-385-4636 and fax at 202-385-4651. Accidents must be reported to the National Transportation Safety Board (NTSB) per instructions contained on the NTSB Web site: www.nts.gov. Further flight operations must not be conducted until the incident is reviewed by AIR-160 and authorization to resume operations is provided to DTI.

5. UA Pilots and Observers.

a. UA PIC roles and responsibilities.

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- (1) The UA PIC must perform crew duties for only one UA at a time.
- (2) All flight operations must have a designated UA PIC. The UA PIC has responsibility over each flight conducted and is accountable for the UA flight operation.
- (3) The UA PIC is responsible for the safety of the UA as well as persons and property along the UA flight path. This includes, but is not limited to, collision avoidance and the safety of persons and property in the air and on the ground.
- (4) The UA PIC must avoid densely populated areas (§ 91.319) and exercise increased vigilance when operating within or in the vicinity of published airway boundaries.

b. UA PIC certification and ratings requirements.

- (1) The UA PIC must hold and be in possession of, at a minimum, an FAA private pilot certificate, with either an airplane, rotorcraft, or powered-lift category; and single- or multiengine class ratings appropriate to the type of UA being operated.
- (2) The UA PIC must have and be in possession of a valid second-class (or higher) airman medical certificate issued under 14 CFR part 67, Medical Standards and Certification.

c. UA PIC currency, flight review, and training.

- (1) No person may act as pilot in command of an unmanned aircraft unless that person has made at least three takeoffs and three landings in manned aircraft within the preceding 90 days acting as the sole manipulator of the flight controls.
- (2) The UA PIC must have a flight review in manned aircraft every 24 calendar months in accordance with § 61.56, Flight review.
- (3) The UA PIC must maintain currency in unmanned aircraft in accordance with (applicant name) company procedures.
- (4) The UA PIC must have a flight review in unmanned aircraft every 24 calendar months in accordance with Defense Technologies, Inc., procedures.
- (5) All UA PICs must have successfully completed applicable (applicant name) training for the UAS.

d. Supplemental UA pilot roles and responsibilities.

- (1) Any additional UA pilot(s) assigned to a crew station during UA flight operations will be considered a supplemental UA pilot.
- (2) A supplemental UA pilot assists the PIC in the operation of the UA and may do so at the same or a different control station as the PIC. The UA PIC will have operational override capability over any supplemental UA pilots, regardless of position.
- (3) A supplemental UA pilot must perform crew duties for only one UA at a time.

e. Supplemental UA pilot certification. The supplemental UA PIC need not be a certificated pilot, but must have successfully completed a recognized private pilot ground school program.

f. Supplemental UA pilot currency, flight review, and training.

- (1) All UA pilots must maintain currency in unmanned aircraft in accordance with (applicant name) company procedures.
- (2) All UA pilots must have a flight review in unmanned aircraft every 24 calendar months in accordance with Defense Technologies, Inc., procedures.
- (3) All UA pilots must have successfully completed applicable Defense Technologies, Inc., training for the UAS.

g. Observer roles and responsibilities. The task of the observer is to provide the UA PIC(s) with instructions to maneuver the UA clear of any potential collision with other traffic. To satisfy these requirements—

- (1) The observer must perform crew duties for only one UA at a time.
- (2) At no time will the observer permit the UA to operate beyond the line-of-sight necessary to ensure maneuvering information can be reliably determined.
- (3) At no time will the observer conduct his/her duties more than 1000 ft laterally or 1000 ft vertically from the UA.
- (4) An observer must maintain continuous visual contact with the UA to discern UA attitude and trajectory in relation to conflicting traffic.
- (5) An observer may be positioned in a chase aircraft. When a chase aircraft is used, it must maintain a reasonable proximity, and must position itself relative to the UA to reduce the hazard of collision in accordance with § 91.111, Operating near other aircraft. When the observer is located in a chase aircraft, the observer's duties must be dedicated to the task of observation only. Concurrent duty as pilot of the chase aircraft is not authorized.
- (6) Observers must continually scan the airspace for other aircraft that pose a potential conflict.
- (7) All flight operations conducted in the flight test area must have an observer to perform traffic avoidance and visual observation to fulfill the see-and-avoid requirement of § 91.113, Right-of-way rules: Except water operations.

h. Observer certification.

- (1) All observers must either hold, at a minimum, an FAA private pilot license or military equivalent, or must have successfully completed specific observer training acceptable to the FAA. An observer does not require currency as a pilot.
- (2) All observers must have in their possession a valid third-class (or higher) airman medical certificate issued under part 67. A valid second-class airman medical certificate is required after 9/10/2008.

i. Observer training.

- (1) All observers must be thoroughly trained, be familiar with, and possess operational experience with the equipment being used. Such training is necessary for observation and detection of other aircraft for collision avoidance purposes as outlined in Defense Technologies, Inc., program letter.
- (2) All observers must have successfully completed applicable Defense Technologies, Inc., training for the UAS.

6. Equipage.

a. The UAS must be equipped with an operable transponder with Mode C or Mode S, and two-way communications equipment allowing communications between the UA pilot, chase aircraft, observers, all UAS control stations.

b. The UA and chase aircraft must be equipped with operable navigation, position, and/or strobe/anti-collision lights. Strobe/anti-collision lights must be illuminated during all operations.

7. Communications.

a. **Before UA flights.** Before conducting operations, the frequency spectrum used for operation and control of the UA must be approved by the Federal Communications Commission or other appropriate government oversight agency.

b. During UA flights.

(1) Appropriate air traffic frequencies must be monitored during flight operations.

(2) All UA positions must maintain two-way communications with each other during all operations. If unable to maintain two-way communication, the UA PIC will expeditiously return the UA to its base of operations while remaining within the flight test area and conclude the flight operation.

8. Flight Conditions.

a. **Daylight operations.** All flight operations must be conducted during daylight hours in visual meteorological conditions (VMC), including cloud clearance minimums as specified in § 91.155, Basic VFR weather minimums. Flight operation in instrument meteorological conditions (IMC) is not permitted.

b. Prohibitions.

(1) The UA is prohibited from aerobatic flight, that is, an intentional maneuver involving an abrupt change in the UA's attitude, an abnormal acceleration, or other flight action not necessary for normal flight. (See § 91.303, Aerobatic flight.)

(2) Flight operations must not involve carrying hazardous material or the dropping of any objects or external stores.

(3) Each UA must be operated by only one control station at a time. A control station may not be used to operate multiple UAS.

c. Transponder requirements.

(1) The UA must operate an approved operational Mode C or Mode S altitude encoding transponder during all flight operations.

(2) Chase aircraft transponders must be on standby while performing chase operations flight with the UA.

CANCELLED

JAN 07 2010

d. Transponder failure.

(1) In the event of transponder failure on either the UA or the chase aircraft, the UA must conclude all flight operations and expeditiously return to its base of operations within the prescribed limitations of this authorization.

(2) In the event of UA transponder failure, a chase aircraft will operate its transponder in Mode C.

e. Notice to airman. Defense Technologies, Inc., must request the issuance of a Notice to Airman (NOTAM) through the Automated Flight Service Station at least 24 hours before flight operation.

9. Flight Termination and Lost Link Procedures.

a. Flight termination. In accordance with Defense Technologies, Inc., program letter, dated 11/25/2008, flight termination must be initiated at any point that safe operation of the UA cannot be maintained or if hazard to persons or property is imminent.

b. Lost link procedures. In the event of lost link, the UA must provide a means of automatic recovery that ensures airborne operations are predictable and that the UA remains within the flight test area. The chase aircraft or observer, all other UAS control stations, and the appropriate ATC facility will be immediately notified of the lost link condition and the expected UA response.

10. Maintenance and Inspection. (Ref.: DTI-UAS-MAIN-INSP-01, Kestral-T UAS Maintenance and Inspection Policy, AEA-FSDO-27-accepted 6/10/08)

a. General requirements. The UAS must not be operated unless it is inspected and maintained in accordance with the Defense Technologies, Inc., Kestral-T UAS, Daily Aircraft Condition Inspection Checklist, Rev. 1.3, dated 6/9/08, reportable on the Aircraft Discrepancy Form, Rev. 1.1, dated 6/9/08, and Daily Ground Station Condition Inspection Checklist, Rev. 1.2, dated 6/9/08, reportable on the Ground Station Discrepancy Form, Rev. 1.1, dated 6/9/08, or later accepted FAA revision. Defense Technologies, Inc., must establish and maintain aircraft maintenance records (see paragraph 10(d) below).

b. Inspections. No person may operate this UAS within the preceding 12 calendar months unless it has had a condition inspection performed according to the Defense Technologies, Inc., Kestral-T UAS, Daily Aircraft Condition Inspection Checklist, Rev. 1.3, dated 6/9/08, reportable on the Aircraft Discrepancy Form, Rev. 1.1, dated 6/9/08 and Daily Ground Station Condition Inspection Checklist, Rev. 1.2, dated 6/9/08, reportable on the Ground Station Discrepancy Form, Rev. 1.1, dated 6/9/08, or later accepted FAA revision. The UAS must also have been found to be in a condition for safe operation. This inspection will be recorded in the UAS maintenance records as described in paragraph 10(d) below.

c. Authorized inspectors. Only those individuals trained and authorized by Defense Technologies, Inc., and acceptable to the FAA may perform the inspections and maintenance required by these operating limitations.

d. Maintenance and inspection records. Maintenance and inspections of the UAS must be recorded in the UAS maintenance records. The following information must be recorded:

(1) Maintenance record entries must include a description of the work performed, the date of completion for the work, the UAS's total time-in-service, and the name and signature of the person performing the work.

(2) Inspection entries must contain the following, or a similarly worded, statement: *I certify that this UAS was inspected on (date), in accordance with the scope and detail of the Defense Technologies, Inc., Kestral-T UAS, Daily Aircraft Condition Inspection Checklist, Rev. 1.3 dated 6/9/08, reportable on the Aircraft Discrepancy Form, Rev. 1.1 dated 6/9/08, and Daily Ground Station Condition Inspection Checklist, Rev. 1.2, dated 6/9/08, reportable on the Ground Station Discrepancy Form, Rev. 1.1, dated 6/9/08, or later accepted FAA revision, and was found to be in a condition for safe operation.*

(3) UAS instruments and equipment required to be installed must be inspected and maintained in accordance with the requirements of the *Defense Technologies, Inc.* Any maintenance or inspection of this equipment must be recorded in the UAS maintenance records.

(4) No person may operate this UAS unless the altimeter system and transponder have been tested within the preceding 24 calendar months in accordance with § 91.411, Altimeter system and altitude reporting equipment tests and inspections, and § 91.413, ATC transponder tests and inspections. These inspections will be recorded in the UAS maintenance records.

11. Information Reporting. Defense Technologies, Inc., will provide the following information to Donald.E.Grampp@FAA.GOV on a monthly basis. A copy of the report shall be provided to AIR-200.

- a. Number of flights conducted under this certificate.
- b. Pilot duty time per flight.
- c. Unusual equipment malfunctions (hardware or software).
- d. Deviations from ATC instructions.
- e. Unintended entry into lost link flight mode that results in a course change.

12. Revisions and Other Provisions.

CANCELLED
JAN 07 2010

a. Experimental certificates, program letters, and operating limitations. The experimental certificate, FAA-accepted Defense Technologies, Inc., program letter, and operating limitations cannot be reissued, renewed, or revised without application being made to the New Cumberland Manufacturing Inspection District Office MIDO, in coordination with AIR-200. AIR-200 will be responsible for FAA Headquarters internal coordination with the Aircraft Certification Service, Flight Standards Service, Air Traffic Organization, Office of the Chief Council, and Office of Rulemaking.

b. Certificates of waiver or authorization. DTI shall immediately notify the Production and Airworthiness Division, AIR-200, and the New Cumberland MIDO, if there is any plan for requesting a Certificate of Authorization or Waiver (COA) for UAS operations during the time the experimental certificate is in effect. An entry in the aircraft logbook is required to document that the aircraft flight authority has been changed from the experimental certificate to COA. When COA operations are concluded and the aircraft resumes flying under the experimental certificate, a record entry will be made in the aircraft logbook by an appropriately rated person to document that the aircraft is in a condition for safe operation and appropriately configured.

c. Amendments and cancellations. The provisions and limitations annotated in this operational approval may be amended or cancelled at any time as deemed necessary by the FAA.

d. Reviews of revisions. (Ref.: DTI-UAS-MAIN-INSP-01, Kestral-T UAS Maintenance and Inspection Policy, AEA-FSDO-27-accepted 6/10/08)

All revisions to Defense Technologies, Inc., Kestral-T UAS UAS Maintenance and Inspection Policy, AEA-FSDO-27-accepted 6/10/08, the Daily Aircraft Condition Inspection Checklist, Rev. 1.3 dated 6/9/08, Aircraft Discrepancy Form, Rev. 1.1, dated 6/9/08, Daily Ground Station Condition Inspection Checklist, Rev. 1.2 dated 6/9/08, and Ground Station Discrepancy Form, Rev. 1.1 dated 6/9/08, must be reviewed and accepted by the Washington Flight Standards District Office (FSDO).

13. UAS Modifications.

a. Software and system changes. All software and system changes will be documented as part of the normal maintenance procedures and will be available for inspection. All software and system changes must be inspected and approved per Defense Technologies, Inc., Kestral-T UAS, Daily Aircraft Condition Inspection Checklist, Rev. 1.3, dated 6/9/08, reportable on the Aircraft Discrepancy Form, Rev. 1.1, dated 6/9/08, and Daily Ground Station Condition Inspection Checklist, Rev. 1.2, dated 6/9/08, reportable on the Ground Station Discrepancy Form, Rev. 1.1, dated 6/9/08, or later accepted FAA revision. All software changes to the aircraft and control station are categorized as major changes, and must be provided in summary form at the time they are incorporated.

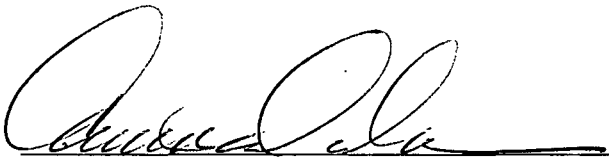
CANCELLED

JAN 07 2010

b. Major modifications. All major modifications, whether performed under the experimental certificate, COA, or other authorizations, that could potentially affect the safe operation of the system, must be documented and provided to the FAA before operating the aircraft under this certificate. Major modifications incorporated under COA or other authorization needs to be provided only if the aircraft is flown under these authorizations during the effective period of the experimental certificate.

c. Submission of modifications. All information requested must be provided to AIR-200.

End of Limitations



Henry K. Cooper
Senior Aviation Safety Inspector
New Cumberland Manufacturing Inspection District Office
Bldg. 201, Rm. 102,
400 Airport Road
New Cumberland, PA 17070-3419

1/9/09
Issuance Date:

I certify that I have read and understand the operating limitations and conditions that are a part of the special airworthiness certificate, FAA Form 8130-7, issued on (date), for the purposes of research and development, market survey, and/or crew training. This special airworthiness certificate is issued for Kestrel – T, RCS 180, serial number 003, registration number N2554V.

Robert J. Mudd Jr.
for Donald Jackson
Applicant (signature)

1/9/09
Date:

Name (Printed): Donald Jackson


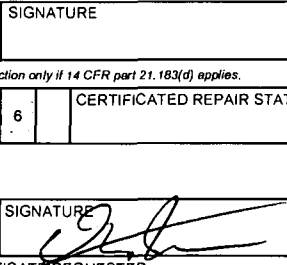
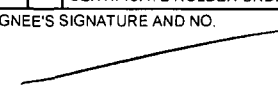
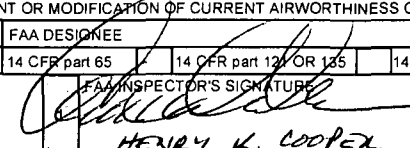
Title: Senior Vice President

Company: Defense Technologies, Inc.

FAA FORM 8130-6, APPLICATION FOR U.S. AIRWORTHINESS CERTIFICATE

Form Approved O.M.B. No. 2120-0018
09/30/2007

Accepted KM Apr/16/2009

 U.S. Department of Transportation Federal Aviation Administration		APPLICATION FOR U.S. AIRWORTHINESS CERTIFICATE		INSTRUCTIONS - Print or type. Do not write in shaded areas; these are for FAA use only. Submit original only to an authorized FAA Representative. If additional space is required, use attachment. For special flight permits complete Sections II, VI and VII as applicable.							
		1. REGISTRATION MARK N2554V		2. AIRCRAFT BUILDER'S NAME (Make) Defense Technologies, Inc.		3. AIRCRAFT MODEL DESIGNATION Kestrel-T		4. YR. MFR 2006	FAA CODING		
		5. AIRCRAFT SERIAL NO. 003		6. ENGINE BUILDER'S NAME (Make) RCS		7. ENGINE MODEL DESIGNATION 180					
		8. NUMBER OF ENGINES 1		9. PROPELLER BUILDER'S NAME (Make) Bambula		10. PROPELLER MODEL DESIGNATION 20" x 8"		11. AIRCRAFT IS (Check if applicable) IMPORT			
II. CERTIFICATION REQUESTED		APPLICATION IS HEREBY MADE FOR: (Check applicable items)									
		A <input checked="" type="checkbox"/> 1 STANDARD AIRWORTHINESS CERTIFICATE (Indicate Category)		<input type="checkbox"/> NORMAL		<input type="checkbox"/> UTILITY	<input type="checkbox"/> ACROBATIC	<input type="checkbox"/> TRANSPORT	<input type="checkbox"/> COMMUTER	<input type="checkbox"/> BALLOON	<input type="checkbox"/> OTHER
		B SPECIAL AIRWORTHINESS CERTIFICATE (Check appropriate items)									
		7 PRIMARY									
		9 LIGHT-SPORT (Indicate Class)		<input type="checkbox"/> AIRPLANE	<input type="checkbox"/> POWER-PARACHUTE	<input type="checkbox"/> WEIGHT-SHIFT-CONTROL	<input type="checkbox"/> GLIDER	<input type="checkbox"/> LIGHTER THAN AIR			
		2 LIMITED									
		5 PROVISIONAL (Indicate Class)		<input type="checkbox"/> 1 CLASS I	<input type="checkbox"/> 2 CLASS II						
		3 RESTRICTED (Indicate operation(s) to be conducted)		<input type="checkbox"/> 1 AGRICULTURE AND PEST CONTROL	<input type="checkbox"/> 2 AERIAL SURVEY	<input type="checkbox"/> 3 AERIAL ADVERTISING					
				<input type="checkbox"/> 4 FOREST (Wildlife Conservation)	<input type="checkbox"/> 5 PATROLLING	<input type="checkbox"/> 6 WEATHER CONTROL					
				<input type="checkbox"/> 0 OTHER (Specify)							
4 EXPERIMENTAL (Indicate operation(s) to be conducted)		<input checked="" type="checkbox"/> 1 RESEARCH AND DEVELOPMENT	<input type="checkbox"/> 2 AMATEUR BUILT	<input type="checkbox"/> 3 EXHIBITION							
		<input type="checkbox"/> 4 AIR RACING	<input checked="" type="checkbox"/> 5 CREW TRAINING	<input checked="" type="checkbox"/> 6 MARKET SURVEY							
		<input type="checkbox"/> 0 TO SHOW COMPLIANCE WITH THE CFR									
		<input type="checkbox"/> 7 OPERATING (Primary Category) KIT BUILT AIRCRAFT									
8 SPECIAL FLIGHT PERMIT (Indicate operation(s) to be conducted, then complete Section VI or VII as applicable on reverse side)		<input type="checkbox"/> 8A Existing Aircraft without an airworthiness certificate & do not meet § 103.1									
		<input type="checkbox"/> 8B Operating Light-Sport Kit-Built									
		<input type="checkbox"/> 8C Operating light-sport previously issued special light-sport category airworthiness certificate under § 21.190									
		<input type="checkbox"/> 1 FERRY FLIGHT FOR REPAIRS, ALTERATIONS, MAINTENANCE, OR STORAGE									
		<input type="checkbox"/> 2 EVACUATION FROM AREA OF IMPENDING DANGER									
		<input type="checkbox"/> 3 OPERATION IN EXCESS OF MAXIMUM CERTIFICATED TAKE-OFF WEIGHT									
<input type="checkbox"/> 4 DELIVERING OR EXPORTING		<input type="checkbox"/> 5 PRODUCTION FLIGHT TESTING									
<input type="checkbox"/> 6 CUSTOMER DEMONSTRATION FLIGHTS											
C <input type="checkbox"/> 6 MULTIPLE AIRWORTHINESS CERTIFICATE (check ABOVE "Restricted Operation" and "Standard" or "Limited" as applicable)											
III. OWNER'S CERTIFICATION		A. REGISTERED OWNER (As shown on certificate of aircraft registration) IF DEALER, CHECK HERE <input type="checkbox"/>									
		NAME Defense Technologies, Inc.				ADDRESS 21795 Shangri-La Drive, Ste C Lexington Park, MD 20653					
		B. AIRCRAFT CERTIFICATION BASIS (Check applicable blocks and complete items as indicated)									
		AIRCRAFT SPECIFICATION OR TYPE CERTIFICATE DATA SHEET (Give No. and Revision No.) N/A		X AIRWORTHINESS DIRECTIVES (Check if all applicable AD's are complied with and give the number of the last AD SUPPLEMENT available in the biweekly series as of the date of application) 31-WEEKLY 2004-01							
		AIRCRAFT LISTING (Give page number(s)) N/A		SUPPLEMENTAL TYPE CERTIFICATE (List number of each STC incorporated) N/A							
		C. AIRCRAFT OPERATION AND MAINTENANCE RECORDS									
		<input checked="" type="checkbox"/> CHECK IF RECORDS IN COMPLIANCE WITH 14 CFR Section 91.417	TOTAL AIRFRAME HOURS 14.27		3. EXPERIMENTAL ONLY (Enter hours flown since last certificate issued or renewed) 4.27						
		D. CERTIFICATION - I hereby certify that I am the registered owner (or his agent) of the aircraft described above, that the aircraft is registered with the Federal Aviation Administration in accordance with Title 49 of the United States Code 44101 et seq. and applicable Federal Aviation Regulations, and that the aircraft has been inspected and is airworthy and eligible for the airworthiness certificate requested.									
		DATE OF APPLICATION January 7, 2008		NAME AND TITLE (Print or type) Donald R. Jackson, Senior Vice President			SIGNATURE 				
IV. INSPECTION AGENCY VERIFICATION		A. THE AIRCRAFT DESCRIBED ABOVE HAS BEEN INSPECTED AND FOUND AIRWORTHY BY: (Complete the section only if 14 CFR part 21.183(d) applies.)									
		2 14 CFR part 121 CERTIFICATE HOLDER (Give Certificate No.)	3 CERTIFICATED MECHANIC (Give Certificate No.)	6 CERTIFICATED REPAIR STATION (Give Certificate No.)							
		5 AIRCRAFT MANUFACTURER (Give name or firm)									
		DATE		TITLE		SIGNATURE					
V. FAA REPRESENTATIVE CERTIFICATION		(Check ALL applicable block items A and B)									
		A. I find that the aircraft described in Section I or VII meets requirements for				<input checked="" type="checkbox"/> THE CERTIFICATE REQUESTED					
		B. Inspection for a special permit under Section VII was conducted by:				AMENDMENT OR MODIFICATION OF CURRENT AIRWORTHINESS CERTIFICATE					
		FAA INSPECTOR		FAA DESIGNEE							
		CERTIFICATE HOLDER UNDER		14 CFR part 65		14 CFR part 121 OR 135		14 CFR part 145			
DATE 1/9/09		DISTRICT OFFICE AME MIDO-44		DESIGNEE'S SIGNATURE AND NO.  4		FAA INSPECTOR'S SIGNATURE  HENRY K. COOPER					

VI. PRODUCTION FLIGHT TESTING	A. MANUFACTURER			
	NAME		ADDRESS	
	B. PRODUCTION BASIS (Check applicable item)			
	<input type="checkbox"/> PRODUCTION CERTIFICATE (Give production certificate number) _____ <input type="checkbox"/> TYPE CERTIFICATE ONLY <input type="checkbox"/> APPROVED PRODUCTION INSPECTION SYSTEM			
	C. GIVE QUANTITY OF CERTIFICATES REQUIRED FOR OPERATING NEEDS			
DATE OF APPLICATION		NAME AND TITLE (Print or Type)		SIGNATURE
VII. SPECIAL FLIGHT PERMIT PURPOSES OTHER THAN PRODUCTION FLIGHT TEST	A. DESCRIPTION OF AIRCRAFT		ADDRESS	
	REGISTERED OWNER			
	BUILDER (Make)		MODEL	
	SERIAL NUMBER		REGISTRATION MARK	
	B. DESCRIPTION OF FLIGHT			
	FROM		TO	
	VIA		DEPARTURE DATE	DURATION
	C. CREW REQUIRED TO OPERATE THE AIRCRAFT AND ITS EQUIPMENT			
	<input type="checkbox"/> PILOT <input type="checkbox"/> CO-PILOT <input type="checkbox"/> FLIGHT ENGINEER <input type="checkbox"/> OTHER (Specify)			
	D. THE AIRCRAFT DOES NOT MEET THE APPLICABLE AIRWORTHINESS REQUIREMENTS AS FOLLOWS:			
	E. THE FOLLOWING RESTRICTIONS ARE CONSIDERED NECESSARY FOR SAFE OPERATION: (Use attachment if necessary)			
F. CERTIFICATION — I hereby certify that I am the registered owner (or his agent) of the aircraft described above; that the aircraft is registered with the Federal Aviation Administration in accordance with Title 49 of the United States Code 44101 <u>et seq.</u> and applicable Federal Aviation Regulations; and that the aircraft has been inspected and is safe for the flight described.				
DATE		NAME AND TITLE (Print or Type)		SIGNATURE
VIII. AIRWORTHINESS DOCUMENTATION (FAA DESIGNEE ONLY)	<input checked="" type="checkbox"/>	A. Operating Limitations and Markings in Compliance with 14 CFR Section 91.9, as applicable.		G. Statement of Conformity, FAA Form 8130-9 (Attach when required)
	<input checked="" type="checkbox"/>	B. Current Operating Limitations Attached		H. Foreign Airworthiness Certification for Import Aircraft (Attach when required)
	<input checked="" type="checkbox"/>	C. Data, Drawings, Photographs, etc. (Attach when required)		I. Previous Airworthiness Certificate Issued in Accordance with 14 CFR Section <u>21.191 a, c, f</u> CAR _____ (Original Attached)
	<input checked="" type="checkbox"/>	D. Current Weight and Balance Information Available in Aircraft		
	<input type="checkbox"/>	E. Major Repair and Alteration, FAA Form 337 (Attach when required)		J. Current Airworthiness Certificate Issued in Accordance with 14 CFR Section <u>21.191(a)(c) and (d)</u> (Copy Attached)
	<input checked="" type="checkbox"/>	F. This inspection Recorded in Aircraft Records		K. Light-Sport Aircraft Statement of Compliance, FAA Form 8130-15 (Attach when required)

UNITED STATES OF AMERICA
DEPARTMENT OF TRANSPORTATION - FEDERAL AVIATION ADMINISTRATION
SPECIAL AIRWORTHINESS CERTIFICATE

A	CATEGORY/DESIGNATION EXPERIMENTAL (UNMANNED AIRCRAFT)	
	PURPOSE Research & Development, Market Survey, Crew Tng.	
B	MANUFACTURER	NAME N/A
		ADDRESS N/A
C	FLIGHT	FROM N/A
		TO N/A
D	N-2554V	SERIAL NO. 003
	BUILDER Defense Technologies, Inc.	MODEL Kestral -T
E	DATE OF ISSUANCE January 9, 2009	EXPIRY January 8, 2010
	OPERATING LIMITATIONS DATED 01/09/09 ARE PART OF THIS CERTIFICATE	
	SIGNATURE OF FAA REPRESENTATIVE Henry K. Cooper	DESIGNATION OR OFFICE NO. ANE-MIDO-44

Any alteration, reproduction or misuse of this certificate may be punishable by a fine not exceeding \$1,000 or imprisonment not exceeding 3 years, or both. THIS CERTIFICATE MUST BE DISPLAYED IN THE AIRCRAFT IN ACCORDANCE WITH APPLICABLE TITLE 14, CODE OF FEDERAL REGULATIONS (CFR).

A	This airworthiness certificate is issued under the authority of Public Law 104-6, 49 United States Code (USC) 44704 and Title 14 Code of Federal Regulations (CFR).
B	The airworthiness certificate authorizes the manufacturer named on the reverse side to conduct production flight tests, and only production flight tests, of aircraft registered in his name. No person may conduct production flight tests under this certificate: (1) Carrying persons or property for compensation or hire; and/or (2) Carrying persons not essential to the purpose of the flight.
C	This airworthiness certificate authorizes the flight specified on the reverse side for the purpose shown in Block A.
D	This airworthiness certificate certifies that as of the date of issuance, the aircraft to which issued has been inspected and found to meet the requirements of the applicable CFR. The aircraft does not meet the requirements of the applicable comprehensive and detailed airworthiness code as provided by Annex 8 to the Convention On International Civil Aviation. No person may operate the aircraft described on the reverse side: (1) except in accordance with the applicable CFR and in accordance with conditions and limitations which may be prescribed by the Administrator as part of this certificate; (2) over any foreign country without the special permission of that country.
E	Unless sooner surrendered, suspended, or revoked, this airworthiness certificate is effective for the duration and under the conditions prescribed in 14 CFR, Part 21, Section 21.181 or 21.217.



New Cumberland Manufacturing Inspection District Office
Bldg. 201, Rm. 102,
400 Airport Road
New Cumberland, PA 17070-3419

COPY

Operating Limitations
Experimental: Research and Development, Market Survey,
and/or Crew Training

Registered Owner Name: Defense Technologies, Inc.	Year Manufactured: 2006
Registered Owner Address: 21795 Shangri-La Dr Lexington Park Maryland 20653	Aircraft Serial Number: 003
Aircraft Description: Kestrel-T: Giant Scale Rc Size Standard Wing And Tail Configuration Tricycle Gear Configuration	Aircraft Model Designation: Kestrel – T
Aircraft Registration: N2554V	Engine: RCS 180
Aircraft Builder: Defense Technologies, Inc.	Propeller: Bambula 20 x 8 wood

The following conditions and limitations apply to all unmanned aircraft system (UAS) flight operations for the Kestrel – T, RCS 180 while operating in the National Airspace System (NAS).

1. General Information.

a. Integrated system. For the purposes of this special airworthiness certificate and operating limitations, the Kestrel – T, RCS 180 operated by Defense Technologies, Inc., is considered to be an integrated system. The system is composed of the following:

- (1) Kestrel – T, RCS 180, serial number 003,
- (2) UAS control station(s), that is, fixed, mobile, ground-based, or airborne.
- (3) Telemetry, launch, and recovery equipment.

100

(4) Communications and navigation equipment, including ground and/or airborne equipment used for command and control of the Kestrel – T, RCS 180.

(5) Ground or airborne equipment used for communication with the chase aircraft, other members of the flight crew, observers, air traffic control (ATC), and other users of the NAS.

b. Compliance with 14 CFR part 61 (Certification: Pilots, Flight Instructors, and Ground Instructors) and part 91 (General Operating and Flight Rules). Unless otherwise specified in this document, the UA pilot-in-command (PIC) and Defense Technologies, Inc., must comply with all applicable sections and parts of 14 CFR including, but not limited to, parts 61 and 91.

c. Operational requirements.

(1) No person may operate this UAS for other than the purpose of research and development, market survey, and/or crew training, to accomplish the flight operation outlined in Defense Technologies, Inc., program letter dated 11/25/2008, Rev. 2.3, which describes compliance with § 21.193(d), Experimental certificates: General, and has been made available to the UA PIC.

(2) This UAS must be operated in accordance with applicable air traffic and general operating rules of part 91 and all additional limitations herein prescribed under the provisions of § 91.319(i), Aircraft having experimental certificates: Operating limitations.

(3) Defense Technologies, Inc., must accumulate at least 50 flight hours under its experimental airworthiness certificate before customer crew training is permitted, in accordance with § 21.195(d), Experimental certificates: Aircraft to be used for market surveys, sales demonstrations, and customer crew training.

d. UA condition. The UA PIC must determine that the UA is in a condition for safe operation, and in a configuration appropriate for the purpose of the intended flight.

e. Multiple-purpose operations. When changing between operating purposes of a multiple purpose certificate, the operator must determine that the aircraft is in a condition for safe operation and appropriate for the purpose intended. A record entry will be made by an appropriately rated person (that is, an individual authorized by the applicant and acceptable to the FAA) to document that finding in the maintenance records.

f. Operation exceptions. No person may operate this UA to carry property for compensation or hire (§ 91.319(a)(2)).

g. UA markings.

(1) This UA must be marked with its U.S. registration number in accordance with part 45 or alternative marking approval issued by the FAA Production and Airworthiness Division, AIR-200.

(2) This UA must display the word *Experimental* in accordance with § 45.23(b), Display of marks, unless otherwise granted an exemption from this requirement.

h. Required documentation. Before conducting the initial flight of the Kestrel – T, RCS 180, Defense Technologies, Inc., must forward a copy of the Kestrel – T, RCS 180 program letter, special airworthiness certificate, and operating limitations to the following personnel:

(1) Peter Acevedo, FAA Air Traffic Representative, Eastern Service Center, System Support, 1701 Columbia Ave, College Park, GA 30337, telephone (404) 305-5598, email peter.k.acevedo@faa.gov.

(2) Richard Posey, Aviation Safety Inspector, Production and Airworthiness Division, AIR-200, 800 Independence Ave, SW, Washington, DC 20591, telephone (202) 267-9538, email richard.posey@faa.gov.

i. Change in registrant address. Section 47.45, Change of address, requires that the FAA Aircraft Registry be notified within 30 days of any change in the aircraft registrant's address. Such notification is to be made by providing AC Form 8050-1, Aircraft Registration Application, to the FAA Aircraft Registration Branch (AFS-750) in Oklahoma City, Oklahoma.

j. Certificate display and manual availability. The airworthiness and registration certificates must be displayed, and the aircraft flight manual must be available to the pilot, as prescribed by the applicable sections of 14 CFR, or as prescribed by an exemption granted in accordance with 14 CFR part 11, Investigative and Enforcement Procedures, to Defense Technologies, Inc.

2. Program Letter. The Kestrel – T, RCS 180 program letter, dated 11/25/2008, Rev. 2.3, will be used as a basis for determining the operating limitations prescribed in this document. All flight operations must be conducted in accordance with the provisions of this document.

3. Initial Flight Testing.

a. Requirements. Flight operations must be conducted within visual line of sight of the pilot/observer. Initial flight testing must be completed upon accumulation of 25 flight hours. Following satisfactory completion of initial flight testing, the operations manager or chief pilot must certify in the records that the aircraft has been shown to comply with § 91.319(b). Compliance with § 91.319(b) must be recorded in the aircraft records with the following, or a similarly worded, statement:

I certify that the prescribed flight test hours have been completed and the aircraft is controllable throughout its normal range of speeds and throughout all maneuvers to be executed, has no hazardous operating characteristics or design features, and is safe for operation. The following aircraft operating data has been demonstrated during the flight testing: speeds V_x _____, and V_y _____, and the weight _____ and CG location _____ at which they were obtained.

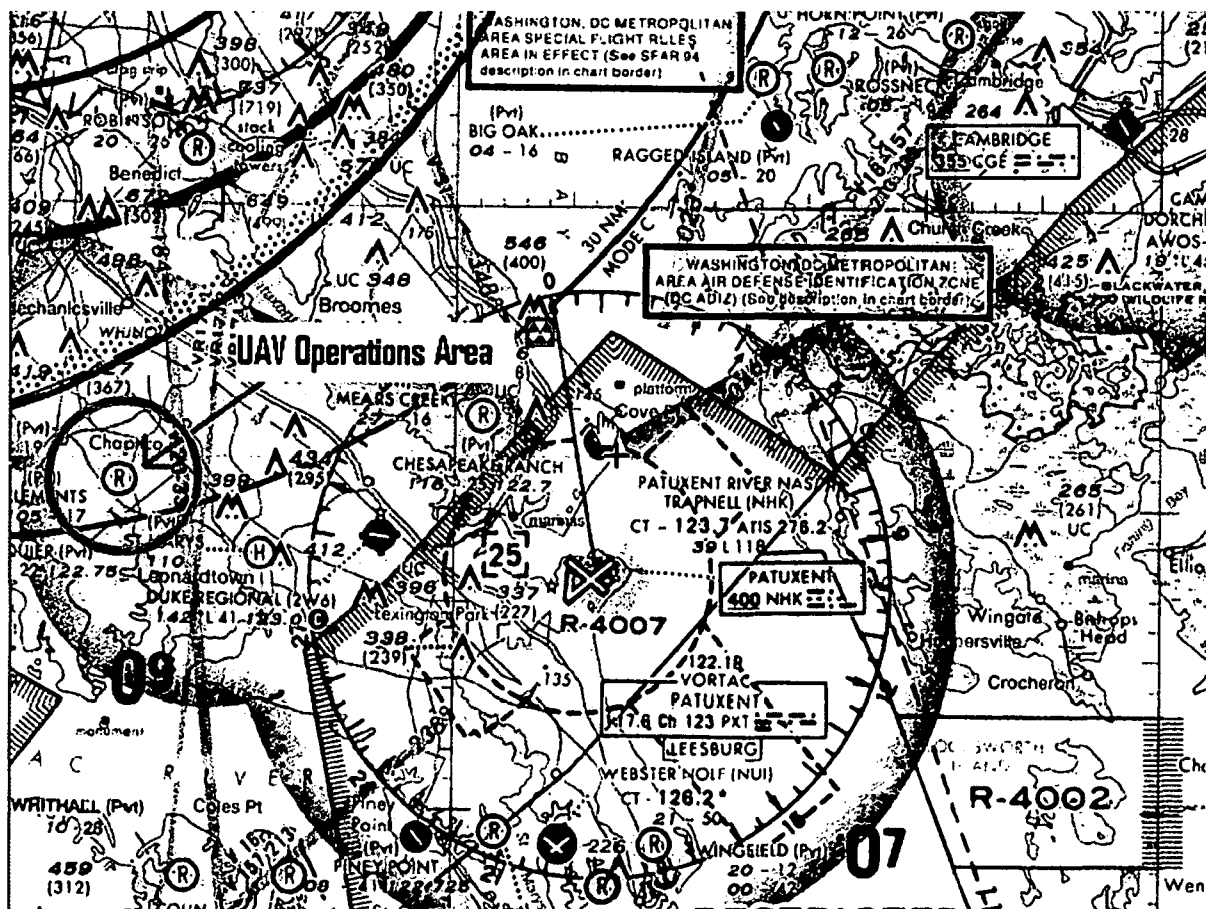
b. Aircraft operations for the purpose of market surveys, sales demonstrations, and customer crew training. These operations cannot be performed until 50 flight hours have been accomplished. An entry in the maintenance records is required as evidence of compliance.

4. Authorized Flight Operations Area.

a. Description of the authorized flight operations area. The flight operations area is located in Clements, MD. Clements Field, 4MD4 is a private airport located at:

Latitude $38^{\circ} 20.408N$
Longitude $76^{\circ} 44.432W$

b. Flight test area. The flight operations area authorized for the UA will be referred to as the flight test area, and is depicted graphically below.



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Figure 1. Aeronautical Chart

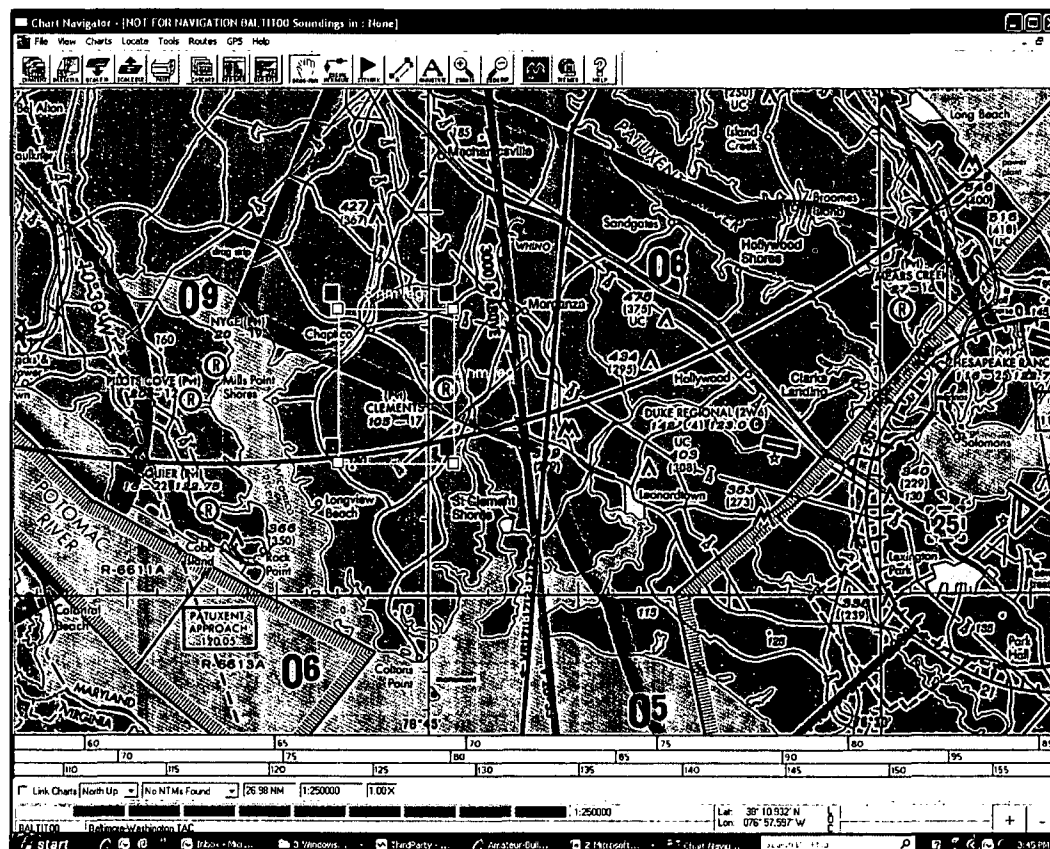


Figure 2. Kestrel – T Flight Test Area

Waypoints for Proposed Kestrel-T Experimental Flight Box - 4MD4 Operations		
Point Name	Latitude	Longitude
Point 1	38° 18.418' N	076° 44.136' W
Point 2	38° 22.440' N	076° 44.153' W
Point 3	38° 22.448' N	076° 47.988' W
Point 4	38° 18.447' N	076° 47.967' W

c. Authorized flight times and conditions. All flight operations must be conducted during daylight hours under visual flight rules (VFR). Potomac TRACN (PCT) will NOT be requiring VHF/UHF monitoring or communication. The following conditions will be included in your operating limitations.

- (1) Operations shall be conducted below 1000 MSL.

(2) Flight operations shall be contained in an area west of 4MD4. The primary containment area is identified as being 2nm north, 2nm south, and 3nm west of the airport as identified in Figure 2 above. All flight operations must remain clear of the ADIZ.

(3) The UAS PIC must notify the PCT TRACON Operations Manager at (540) 349-7541 and PAX River NAS at (301) 342-3740 at least 30 minutes prior to launch and immediately upon termination of operations each day. DTI must provide PCT with an on-site contact name and phone number for two-way communications with ATC for each flight.

(4) The Kestrel UAS shall transmit the assigned beacon code 0377 and altitude information (Mode-C) for the duration of the flight. Any failure of the transponder or inability to properly squawk the assigned code shall be reported to PCT and flight operations shall be terminated.

(5) The Kestrel pilot shall have the capability of maneuvering the UAS or suspending operations as instructed by PCT.

(6) At no time will the external pilot conduct his/her duties more than 1 mile laterally or 1000 ft vertically from the UA.

(7) A Notice to Airmen (NOTAM) shall be issued when UAS operations are being conducted. (Note: Do not use 'distant' or D here as the NOTAM classification and codes have recently been changed.) DTI shall contact the Automated Flight Service Station (FSS) no less than 48 hours prior to the operation and provide:

- i) Name, address, and telephone number of the person giving notice.
- ii) Nature of the activity.
- iii) Date, time, and duration of the activity.
- iv) Size of the affected area in nautical mile radius and affected altitudes.
- v) Location of center of affected area in relation to airport.
- vi) Location of center of affected area in relation to nearest VOR/DME or VORTAC.

d. Criteria for remaining in the flight test area. The UAS PIC must ensure all UA flight operations remain within the lateral and vertical boundaries of the flight test area. Furthermore, the UAS PIC must take into account all factors that may affect the capability of the UA to remain within the flight test area. This includes, but is not limited to, considerations for wind, gross weight, and glide distances.

e. Incident/accident reporting. Any incident/accident and any flight operation that transgresses the lateral or vertical boundaries of the flight test area or any restricted airspace must be reported to the FAA within 24 hours. This information must be reported to the Unmanned Aircraft Program Office, AIR-160. AIR-160 can be reached by telephone at 202-385-4636 and fax at 202-385-4651. Accidents must be reported to the National Transportation Safety Board (NTSB) per instructions contained on the NTSB Web site: www.nts.gov. Further flight operations must not be conducted until the incident is reviewed by AIR-160 and authorization to resume operations is provided to DTI.

5. UA Pilots and Observers.

a. UA PIC roles and responsibilities.

- (1) The UA PIC must perform crew duties for only one UA at a time.
- (2) All flight operations must have a designated UA PIC. The UA PIC has responsibility over each flight conducted and is accountable for the UA flight operation.
- (3) The UA PIC is responsible for the safety of the UA as well as persons and property along the UA flight path. This includes, but is not limited to, collision avoidance and the safety of persons and property in the air and on the ground.
- (4) The UA PIC must avoid densely populated areas (§ 91.319) and exercise increased vigilance when operating within or in the vicinity of published airway boundaries.

b. UA PIC certification and ratings requirements.

- (1) The UA PIC must hold and be in possession of, at a minimum, an FAA private pilot certificate, with either an airplane, rotorcraft, or powered-lift category; and single- or multiengine class ratings appropriate to the type of UA being operated.
- (2) The UA PIC must have and be in possession of a valid second-class (or higher) airman medical certificate issued under 14 CFR part 67, Medical Standards and Certification.

c. UA PIC currency, flight review, and training.

- (1) No person may act as pilot in command of an unmanned aircraft unless that person has made at least three takeoffs and three landings in manned aircraft within the preceding 90 days acting as the sole manipulator of the flight controls.
- (2) The UA PIC must have a flight review in manned aircraft every 24 calendar months in accordance with § 61.56, Flight review.
- (3) The UA PIC must maintain currency in unmanned aircraft in accordance with (applicant name) company procedures.
- (4) The UA PIC must have a flight review in unmanned aircraft every 24 calendar months in accordance with Defense Technologies, Inc., procedures.
- (5) All UA PICs must have successfully completed applicable (applicant name) training for the UAS.

d. Supplemental UA pilot roles and responsibilities.

- (1) Any additional UA pilot(s) assigned to a crew station during UA flight operations will be considered a supplemental UA pilot.
- (2) A supplemental UA pilot assists the PIC in the operation of the UA and may do so at the same or a different control station as the PIC. The UA PIC will have operational override capability over any supplemental UA pilots, regardless of position.
- (3) A supplemental UA pilot must perform crew duties for only one UA at a time.

e. Supplemental UA pilot certification. The supplemental UA PIC need not be a certificated pilot, but must have successfully completed a recognized private pilot ground school program.

f. Supplemental UA pilot currency, flight review, and training.

- (1) All UA pilots must maintain currency in unmanned aircraft in accordance with (applicant name) company procedures.
- (2) All UA pilots must have a flight review in unmanned aircraft every 24 calendar months in accordance with Defense Technologies, Inc., procedures.
- (3) All UA pilots must have successfully completed applicable Defense Technologies, Inc., training for the UAS.

g. Observer roles and responsibilities. The task of the observer is to provide the UA PIC(s) with instructions to maneuver the UA clear of any potential collision with other traffic. To satisfy these requirements—

- (1) The observer must perform crew duties for only one UA at a time.
- (2) At no time will the observer permit the UA to operate beyond the line-of-sight necessary to ensure maneuvering information can be reliably determined.
- (3) At no time will the observer conduct his/her duties more than 1000 ft laterally or 1000 ft vertically from the UA.
- (4) An observer must maintain continuous visual contact with the UA to discern UA attitude and trajectory in relation to conflicting traffic.
- (5) An observer may be positioned in a chase aircraft. When a chase aircraft is used, it must maintain a reasonable proximity, and must position itself relative to the UA to reduce the hazard of collision in accordance with § 91.111, Operating near other aircraft. When the observer is located in a chase aircraft, the observer's duties must be dedicated to the task of observation only. Concurrent duty as pilot of the chase aircraft is not authorized.
- (6) Observers must continually scan the airspace for other aircraft that pose a potential conflict.
- (7) All flight operations conducted in the flight test area must have an observer to perform traffic avoidance and visual observation to fulfill the see-and-avoid requirement of § 91.113, Right-of-way rules: Except water operations.

h. Observer certification.

- (1) All observers must either hold, at a minimum, an FAA private pilot license or military equivalent, or must have successfully completed specific observer training acceptable to the FAA. An observer does not require currency as a pilot.
- (2) All observers must have in their possession a valid third-class (or higher) airman medical certificate issued under part 67. A valid second-class airman medical certificate is required after 9/10/2008.

i. Observer training.

- (1) All observers must be thoroughly trained, be familiar with, and possess operational experience with the equipment being used. Such training is necessary for observation and detection of other aircraft for collision avoidance purposes as outlined in Defense Technologies, Inc., program letter.
- (2) All observers must have successfully completed applicable Defense Technologies, Inc., training for the UAS.

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6. Equipage.

a. The UAS must be equipped with an operable transponder with Mode C or Mode S, and two-way communications equipment allowing communications between the UA pilot, chase aircraft, observers, all UAS control stations.

b. The UA and chase aircraft must be equipped with operable navigation, position, and/or strobe/anti-collision lights. Strobe/anti-collision lights must be illuminated during all operations.

7. Communications.

a. Before UA flights. Before conducting operations, the frequency spectrum used for operation and control of the UA must be approved by the Federal Communications Commission or other appropriate government oversight agency.

b. During UA flights.

- (1) Appropriate air traffic frequencies must be monitored during flight operations.
- (2) All UA positions must maintain two-way communications with each other during all operations. If unable to maintain two-way communication, the UA PIC will expeditiously return the UA to its base of operations while remaining within the flight test area and conclude the flight operation.

8. Flight Conditions.

a. Daylight operations. All flight operations must be conducted during daylight hours in visual meteorological conditions (VMC), including cloud clearance minimums as specified in § 91.155, Basic VFR weather minimums. Flight operation in instrument meteorological conditions (IMC) is not permitted.

b. Prohibitions.

- (1) The UA is prohibited from aerobatic flight, that is, an intentional maneuver involving an abrupt change in the UA's attitude, an abnormal acceleration, or other flight action not necessary for normal flight. (See § 91.303, Aerobatic flight.)
- (2) Flight operations must not involve carrying hazardous material or the dropping of any objects or external stores.
- (3) Each UA must be operated by only one control station at a time. A control station may not be used to operate multiple UAS.

c. Transponder requirements.

- (1) The UA must operate an approved operational Mode C or Mode S altitude encoding transponder during all flight operations.
- (2) Chase aircraft transponders must be on standby while performing chase operations flight with the UA.



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d. Transponder failure.

(1) In the event of transponder failure on either the UA or the chase aircraft, the UA must conclude all flight operations and expeditiously return to its base of operations within the prescribed limitations of this authorization.

(2) In the event of UA transponder failure, a chase aircraft will operate its transponder in Mode C.

e. Notice to airman. Defense Technologies, Inc., must request the issuance of a Notice to Airman (NOTAM) through the Automated Flight Service Station at least 24 hours before flight operation.

9. Flight Termination and Lost Link Procedures.

a. Flight termination. In accordance with Defense Technologies, Inc., program letter, dated 11/25/2008, flight termination must be initiated at any point that safe operation of the UA cannot be maintained or if hazard to persons or property is imminent.

b. Lost link procedures. In the event of lost link, the UA must provide a means of automatic recovery that ensures airborne operations are predictable and that the UA remains within the flight test area. The chase aircraft or observer, all other UAS control stations, and the appropriate ATC facility will be immediately notified of the lost link condition and the expected UA response.

10. Maintenance and Inspection. (Ref.: DTI-UAS-MAIN-INSP-01, Kestral-T UAS Maintenance and Inspection Policy, AEA-FSDO-27-accepted 6/10/08)

a. General requirements. The UAS must not be operated unless it is inspected and maintained in accordance with the Defense Technologies, Inc., Kestral-T UAS, Daily Aircraft Condition Inspection Checklist, Rev. 1.3, dated 6/9/08, reportable on the Aircraft Discrepancy Form, Rev. 1.1, dated 6/9/08, and Daily Ground Station Condition Inspection Checklist, Rev. 1.2, dated 6/9/08, reportable on the Ground Station Discrepancy Form, Rev. 1.1, dated 6/9/08, or later accepted FAA revision. Defense Technologies, Inc., must establish and maintain aircraft maintenance records (see paragraph 10(d) below).

b. Inspections. No person may operate this UAS within the preceding 12 calendar months unless it has had a condition inspection performed according to the Defense Technologies, Inc., Kestral-T UAS, Daily Aircraft Condition Inspection Checklist, Rev. 1.3, dated 6/9/08, reportable on the Aircraft Discrepancy Form, Rev. 1.1, dated 6/9/08 and Daily Ground Station Condition Inspection Checklist, Rev. 1.2, dated 6/9/08, reportable on the Ground Station Discrepancy Form, Rev. 1.1, dated 6/9/08, or later accepted FAA revision. The UAS must also have been found to be in a condition for safe operation. This inspection will be recorded in the UAS maintenance records as described in paragraph 10(d) below.

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c. Authorized inspectors. Only those individuals trained and authorized by Defense Technologies, Inc., and acceptable to the FAA may perform the inspections and maintenance required by these operating limitations.

d. Maintenance and inspection records. Maintenance and inspections of the UAS must be recorded in the UAS maintenance records. The following information must be recorded:

(1) Maintenance record entries must include a description of the work performed, the date of completion for the work, the UAS's total time-in-service, and the name and signature of the person performing the work.

(2) Inspection entries must contain the following, or a similarly worded, statement: *I certify that this UAS was inspected on (date), in accordance with the scope and detail of the Defense Technologies, Inc., Kestral-T UAS, Daily Aircraft Condition Inspection Checklist, Rev. 1.3 dated 6/9/08, reportable on the Aircraft Discrepancy Form, Rev. 1.1 dated 6/9/08, and Daily Ground Station Condition Inspection Checklist, Rev. 1.2, dated 6/9/08, reportable on the Ground Station Discrepancy Form, Rev. 1.1, dated 6/9/08, or later accepted FAA revision, and was found to be in a condition for safe operation.*

(3) UAS instruments and equipment required to be installed must be inspected and maintained in accordance with the requirements of the *Defense Technologies, Inc.* Any maintenance or inspection of this equipment must be recorded in the UAS maintenance records.

(4) No person may operate this UAS unless the altimeter system and transponder have been tested within the preceding 24 calendar months in accordance with § 91.411, Altimeter system and altitude reporting equipment tests and inspections, and § 91.413, ATC transponder tests and inspections. These inspections will be recorded in the UAS maintenance records.

11. Information Reporting. Defense Technologies, Inc., will provide the following information to Donald.E.Grampp@FAA.GOV on a monthly basis. A copy of the report shall be provided to AIR-200.

- a. Number of flights conducted under this certificate.
- b. Pilot duty time per flight.
- c. Unusual equipment malfunctions (hardware or software).
- d. Deviations from ATC instructions.
- e. Unintended entry into lost link flight mode that results in a course change.

12. Revisions and Other Provisions.

a. Experimental certificates, program letters, and operating limitations. The experimental certificate, FAA-accepted Defense Technologies, Inc., program letter, and operating limitations cannot be reissued, renewed, or revised without application being made to the New Cumberland Manufacturing Inspection District Office MIDO, in coordination with AIR-200. AIR-200 will be responsible for FAA Headquarters internal coordination with the Aircraft Certification Service, Flight Standards Service, Air Traffic Organization, Office of the Chief Council, and Office of Rulemaking.

b. Certificates of waiver or authorization. DTI shall immediately notify the Production and Airworthiness Division, AIR-200, and the New Cumberland MIDO, if there is any plan for requesting a Certificate of Authorization or Waiver (COA) for UAS operations during the time the experimental certificate is in effect. An entry in the aircraft logbook is required to document that the aircraft flight authority has been changed from the experimental certificate to COA. When COA operations are concluded and the aircraft resumes flying under the experimental certificate, a record entry will be made in the aircraft logbook by an appropriately rated person to document that the aircraft is in a condition for safe operation and appropriately configured.

c. Amendments and cancellations. The provisions and limitations annotated in this operational approval may be amended or cancelled at any time as deemed necessary by the FAA.

d. Reviews of revisions. (Ref.: DTI-UAS-MAIN-INSP-01, Kestral-T UAS Maintenance and Inspection Policy, AEA-FSDO-27-accepted 6/10/08)

All revisions to Defense Technologies, Inc., Kestral-T UAS UAS Maintenance and Inspection Policy, AEA-FSDO-27-accepted 6/10/08, the Daily Aircraft Condition Inspection Checklist, Rev. 1.3 dated 6/9/08, Aircraft Discrepancy Form, Rev. 1.1, dated 6/9/08, Daily Ground Station Condition Inspection Checklist, Rev. 1.2 dated 6/9/08, and Ground Station Discrepancy Form, Rev. 1.1 dated 6/9/08, must be reviewed and accepted by the Washington Flight Standards District Office (FSDO).

13. UAS Modifications.

a. Software and system changes. All software and system changes will be documented as part of the normal maintenance procedures and will be available for inspection. All software and system changes must be inspected and approved per Defense Technologies, Inc., Kestral-T UAS, Daily Aircraft Condition Inspection Checklist, Rev. 1.3, dated 6/9/08, reportable on the Aircraft Discrepancy Form, Rev. 1.1, dated 6/9/08, and Daily Ground Station Condition Inspection Checklist, Rev. 1.2, dated 6/9/08, reportable on the Ground Station Discrepancy Form, Rev. 1.1, dated 6/9/08, or later accepted FAA revision. All software changes to the aircraft and control station are categorized as major changes, and must be provided in summary form at the time they are incorporated.

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b. Major modifications. All major modifications, whether performed under the experimental certificate, COA, or other authorizations, that could potentially affect the safe operation of the system, must be documented and provided to the FAA before operating the aircraft under this certificate. Major modifications incorporated under COA or other authorization needs to be provided only if the aircraft is flown under these authorizations during the effective period of the experimental certificate.

c. Submission of modifications. All information requested must be provided to AIR-200.

End of Limitations



Henry K. Cooper
Senior Aviation Safety Inspector
New Cumberland Manufacturing Inspection District Office
Bldg. 201, Rm. 102,
400 Airport Road
New Cumberland, PA 17070-3419

1/9/09
Issuance Date:

I certify that I have read and understand the operating limitations and conditions that are a part of the special airworthiness certificate, FAA Form 8130-7, issued on (date), for the purposes of research and development, market survey, and/or crew training. This special airworthiness certificate is issued for Kestrel - T, RCS 180, serial number 003, registration number N2554V.

Robert J. Mudd Jr.
for Donald Jackson
Applicant (signature)

1/9/09
Date:

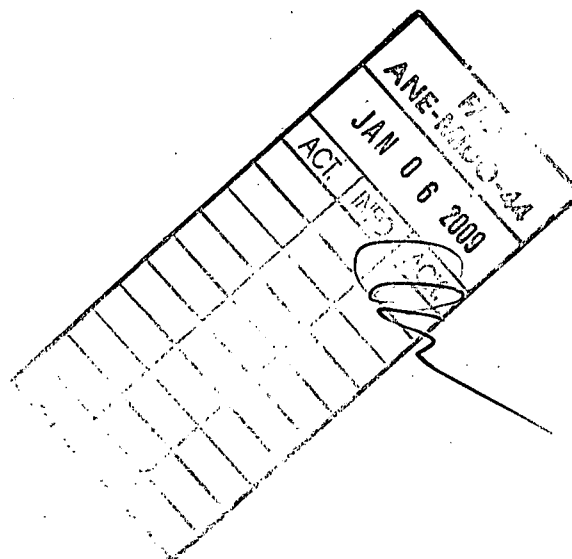
Name (Printed): Donald Jackson

Title: Senior Vice President

Company: Defense Technologies, Inc.

UAV Program Letter
Experimental Certification Request
Defense Technologies Inc.

Kestrel-T
N2554V



Sirs,

The contents of this UAV Program Letter are a request by Defense Technologies, Inc. (DTI) to modify the existing flight operations box and airframe configuration for N2554V, a DTI Special Airworthiness Certificated Kestrel-T UAS. N2554V has been configured for crew training, market surveys and research development purposes.

The current flight operations box features 2nm North/South and 3nm East/West borders with the airport located in the Southeast corner of the box. Ceilings are limited to 1000 feet AGL.

DTI is requesting the flight operations box be enlarged to 4nm North/South and 3nm East West borders with the airport located in the center of the Eastern border. This box sizing allows DTI to operate from the runway with a flight leg of up to 2nm in length, while keeping the UA within a 1nm visibility restriction range. This new flight operations box stays the same distance or farther, that the current box from the nearest airway and is contained within class E and G airspace.

DTI is requesting that alternate propeller sizes recommended by the engine manufacturer, be included as optional or alternate equipment for N2554V. These alternate propellers have been added to the aircraft specifications and configurations detailed in this document. DTI wishes to evaluate these alternate propellers to see what affect they have on aircraft performance.

Further, DTI has developed a new wing of composite construction as an alternative to the current wing of wooden construction. This new wing has been included as an alternate aircraft configuration with modifications made to Para. 4.a. of this document. Additionally, the aircraft specifications section has been updated to show this alternate configuration.

DTI is asking for these alternate airframe configurations to allow for flight tests under the Research and Development portion of the Special Airworthiness Certificate, 14 CFR § 21.191, with the goals of improving flight characteristics, increasing weight carrying ability and improving on the durability of the wing for N2554V.

Table 1 – Kestrel-T UAS Information

<u>REGISTERED OWNER NAME:</u> DEFENSE TECHNOLOGIES INC.	<u>AIRCRAFT BUILDER:</u> DEFENSE TECHNOLOGIES, INC.
<u>REGISTERED OWNER ADDRESS:</u> 21795 C SHANGRI-LA DR LEXINGTON PARK MARYLAND 20653	<u>YEAR MANUFACTURED:</u> 2006
<u>AIRCRAFT DESCRIPTION:</u> STANDARD WING AND TAIL CONFIGURATION TRICYCLE GEAR CONFIGURATION TOTAL LENGTH 78.75 INCHES WING SPAN 105.125 INCHES – SHORT WING 119.463 INCHES – LONG WING WITH FLAT PLATE WING TIPS 125.463 INCHES – LONG WING WITH SHAPED WING TIPS 2 CYCLE INTERNAL COMBUSTION ENGINE PICCOLO AUTOPILOT	<u>AIRCRAFT SERIAL NUMBER:</u> DTI SERIAL #: 003 <u>AIRCRAFT MODEL DESIGNATION:</u> KESTREL – T <u>ENGINE MODEL:</u> RCS 180 <u>PROPELLER MODEL:</u> Bambula 20 x 8 wood Bambula 18 x 8 wood Bambula 20 x 10 wood
<u>AIRCRAFT REGISTRATION:</u> N2554V	

1. DEFINE THE EXPERIMENTAL PURPOSE(S) UNDER WHICH THE AIRCRAFT IS TO BE OPERATED (14 CFR § 21.191).

The Kestrel-T UAS, N2554V will be operated for the following purposes per 14 CFR § 21.191:

- Research and Development – To test new aircraft equipment, new aircraft installations, new aircraft operating techniques or new aircraft uses.
- Crew Training – To train Defense Technologies UAS flight crew members.
- Market Surveys – To conduct market surveys, sales demonstrations and customer crew training, per Sec. 21.195.

2. DESCRIBE THE PURPOSE/SCOPE OF THE EXPERIMENTAL PROGRAM FOR EACH 14 CFR § 21.191 EXPERIMENTAL PURPOSE SOUGHT (14 CFR §§ 21.193(b)(d)).

Kestrel-T UAS is identified in Para. 4. of this UAV Program Letter for Experimental Certification Request by Defense Technologies Inc.

Purposes:

- Research and Development - DTI is developing UAS related hardware items for the purpose of advancing the state of UAS operations in the areas of safety, economy, ecology, human factors and UA situational awareness. Potential products such as payload systems and data links and UAS related software will require in-flight test for validation and marketing in order for Defense Technologies to maintain a healthy growth economically.

DTI is also developing composite UA airframe components that will require testing and validation of the design concepts and the development of new operating techniques, as well as new and / or revised aircraft equipment and new airframe installations.

- Crew Training – DTI will be using Kestrel-T UAS for the training on DTI's own UAS flight team. Training includes the training of new members, cross-training of existing members, currency training and checkouts and flight reviews.
- Market Surveys – DTI will be using Kestrel-T UAS for market surveys and sales demonstrations of UAS products. Additionally, DTI may use Kestrel-T UAS to train customer flight crews.

3. DEFINE THE AREA(S) IN WHICH THE EXPERIMENTAL FLIGHTS WILL BE CONDUCTED.

a. Describe the areas over which the flights are to be conducted and address of base operation (14 CFR § 21.193(d)(3)).

4MD4 Clements Field is a private airport located at:

Latitude 38° 20.408N

Longitude 76° 44.432W

4MD4 is 33.5 nm SSE of DCA on a 156 degree true or 166 degree magnetic bearing, located in a rural farming community about 1nm from a two-lane road.

4MD4 is also 16 nm from the PXT VORTAC on the 290 degree radial.

Elevation: 105 feet.

Runway: 1700 feet, sod.

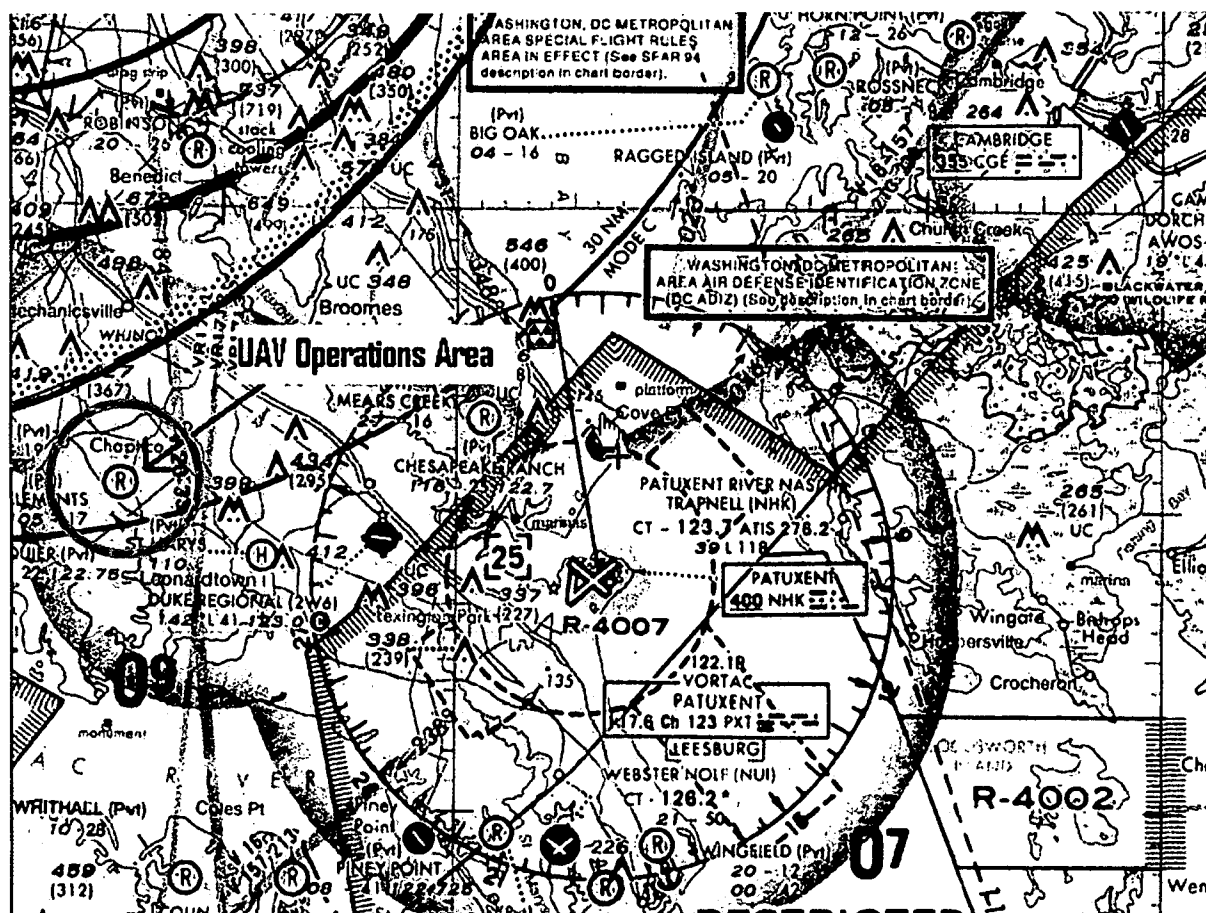


Figure 1. Sectional Chart View of 4MD4 Clements Field

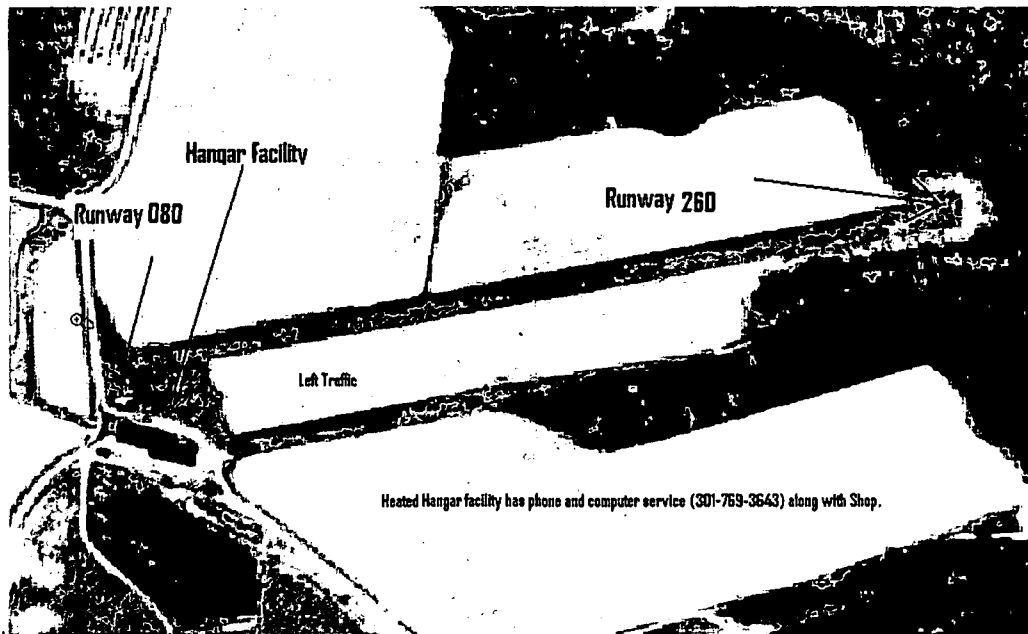


Figure 2. Clements Airfield 4MD4 – Aerial View

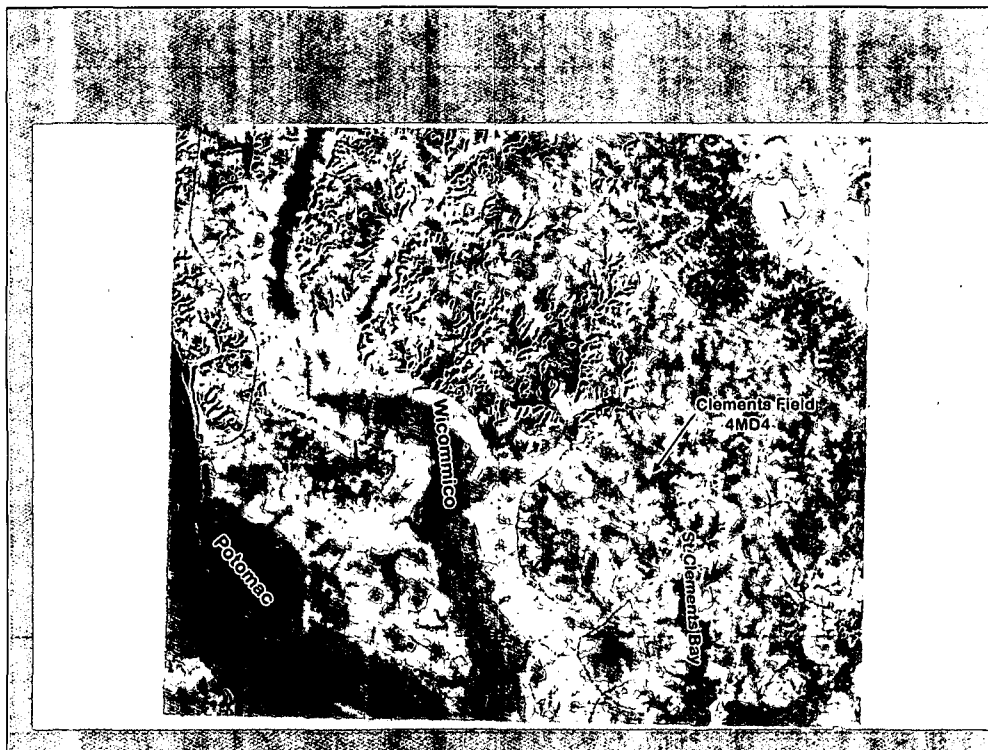


Figure 3. Topographic Information of 4MD4 Clements Field

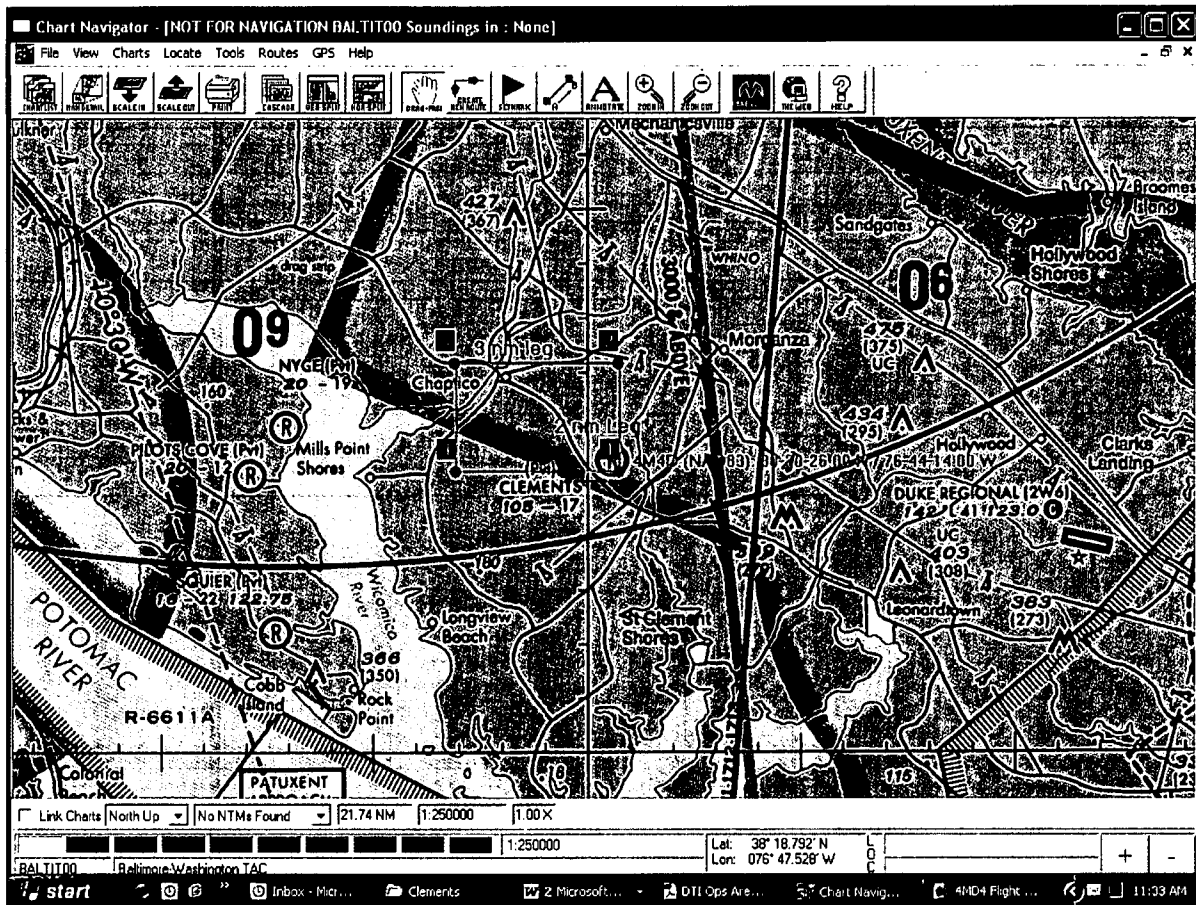


Figure 4. Current Experimental Flight Box for Kestrel-T with 2nm x 3nm legs.

The current flight box for Kestrel-T UAS Experimental flight operations features 2 nm North/South legs and 3nm East/West legs with 4MD4 located at the Southeast corner of the flight box. This box is designed to stay completely within Potomac airspace while remaining clear of the ADIZ, as well as increasing the clearance from the closest VR route.

Table 2. Current Kestrel-T Experimental Flight Box Area

All Operations - 1000 ft AGL Ceiling Limit

Waypoints Kestrel-T Experimental Flight Box - 4MD4 Operations		
Point Name	Latitude	Longitude
Point 1	38° 20.148' N	076° 44.241' W
Point 2	38° 22.138' N	076° 44.263' W
Point 3	38° 22.145' N	076° 48.098' W
Point 4	38° 20.156' N	076° 458.074' W

- b. Identify all proposed flight areas using latitude and longitude on aeronautical chart.

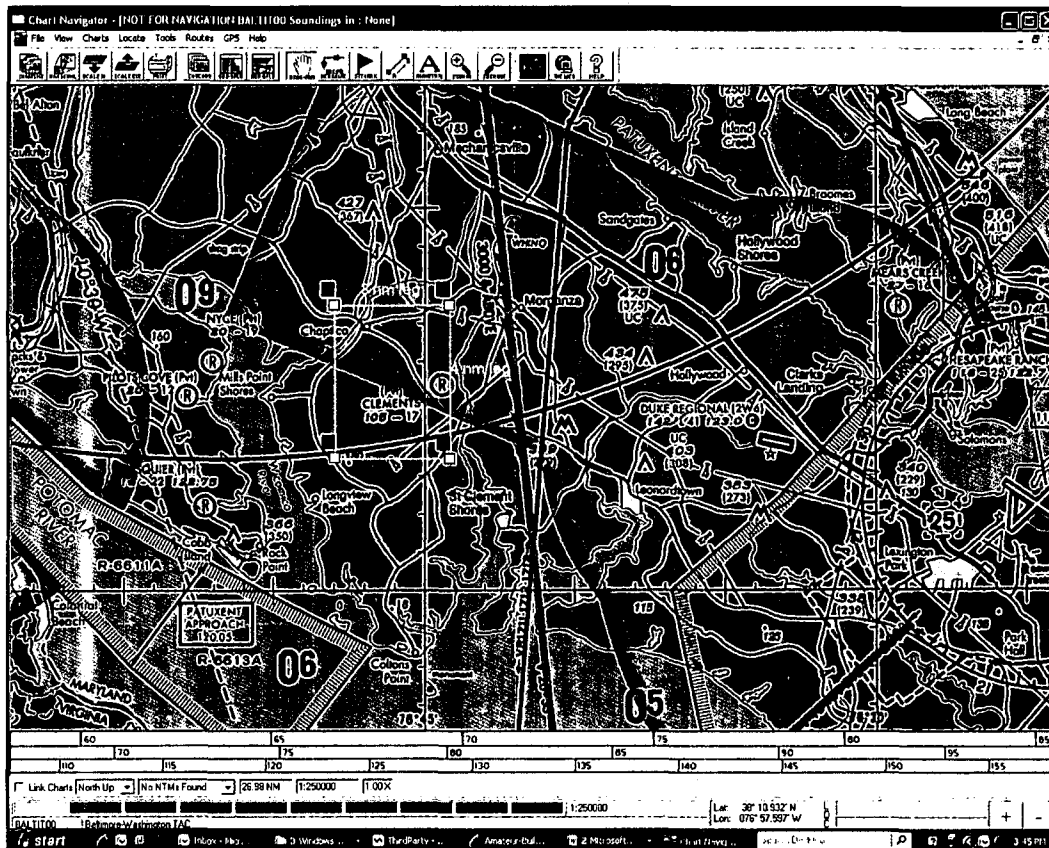


Figure 5. Requested Revised Flight Box for Kestrel-T UAS with 3 x 4 nm legs.

The requested flight box illustrated in Fig. 5 for Kestrel-T N2554V UAS flight operations features 4 nm North / South legs and 3nm East / West legs with 4MD4 located at the center of the Eastern border of the flight box. This box is designed to stay clear of the ADIZ and remain a safe distance from the nearest VR route.

A ceiling of 1000 feet AGL is requested for this flight operations box.

Visual limits of 1 nm horizontal distance are proposed for this flight operations box. Normal operations, with external personnel located at the runway, will not exceed 1nm north, 1nm south and 1nm west of the airport and will remain clear of the ADIZ. See Figure 6 and Table 4 for the inner flight box details.

Table 3. Requested Kestrel-T Experimental 3x4 nm Outer Flight Box Area
All Operations - 1000 ft AGL Ceiling Limit

Waypoints for Proposed Kestrel-T Experimental Flight Box - 4MD4 Operations		
Point Name	Latitude	Longitude
Point 1	38° 18.418' N	076° 44.136' W
Point 2	38° 22.440' N	076° 44.153' W
Point 3	38° 22.448' N	076° 47.988' W
Point 4	38° 18.447' N	076° 47.967' W

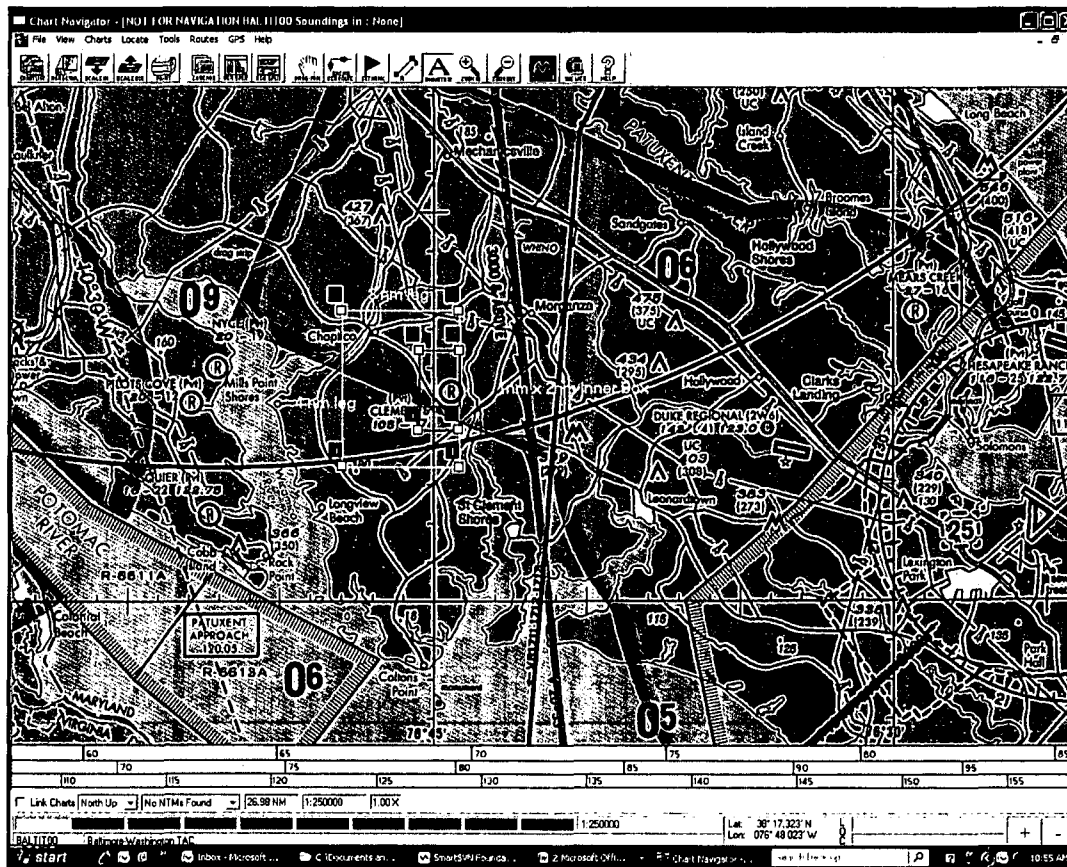


Figure 6. Proposed Flight Box with 1 x 2 nm Inner Flight Box

Table 4. Requested Kestrel-T Experimental 1x2 nm Inner Flight Box Area
All Operations - 1000 ft AGL Ceiling Limit

Waypoints for Proposed Kestrel-T Experimental Flight Box - 4MD4 Operations		
Point Name	Latitude	Longitude
Point 1	38° 19.391' N	076° 44.161' W
Point 2	38° 21.424' N	076° 44.128' W
Point 3	38° 21.427' N	076° 45.442' W
Point 4	38° 19.372' N	076° 45.474' W

Figure 6 and Table 4 detail the proposed inner 1 x 2 nm flight box designed to maintain visual contact with the Kestrel-T UA from the runway operations area.

This inner flight box will not require stationing observers along the proposed route or flight nor will it require a chase aircraft.

Flight profiles for the Kestrel-T UAS will vary according to the mission. For example, crew training will consist of pattern work to include multiple takeoffs and landings, touch and go operations and autopilot flight within the proposed flight box. Autopilot flight consists of pre-planned and dynamic waypoint routes and circular and rectangular loiters. For example, when evaluating an EO sensor, it is necessary to vary speed, loiter radius and altitude. While training UAS crews to operate a mission, it will be necessary to fly a planned route and when a target of interest is detected, transition to a loiter over the target.

The requested flight box for Kestrel-T Experimental flight operations consists of two (2) flight boxes. An outer box features 4nm North/South legs and 3nm East/West legs with 4MD4 centered at the Eastern boundary line of the flight box, with a 1000 AGL ceiling. This outer flight box can only be utilized with properly positioned qualified observers and a coordinated flight crew.

The inner flight box, used for normal flight operations with external pilots and observers situated at the runway, features 2nm North/South legs and 1nm East/West legs with 4MD4 located centered at the Eastern boundary line of the flight box, with a 1000 AGL ceiling.

At all times the Kestrel-T UAs will be kept within a 1 nm range of a pilot and/or observer.

Both flight boxes are designed to stay clear of the ADIZ, as well as increasing the clearance from the closest VR route.

Defense Technologies proposes that Kestrel-T UAS flights consist of rectangular routes within the boundaries of the operations area and circular loiter patterns

anywhere within the operations area. Rectangular routes and loiters may be either clockwise or counter-clockwise in direction.

c. Include information on airspeed, altitude, number of flight hours, number of flights and program duration for each test flight area.

Airspeed: VNE 80 knots.

Airspeed: Normal Cruise 45-55 knots.

Altitude: up to 1000 Feet AGL.

Each test flight will be about 30 to 60 minutes in duration with two (2) to six (6) flights per day. Tests are scheduled in five (5) day blocks with a minimum of three (3) flight days planned. Testing will take place over the entire calendar year.

d. What class of airspace will be used?

Class E and G depending on altitude flown.

e. Will minimum fuel requirements of 14 CFR § 91.151 be met?

Yes.

f. Will flight-testing include payload testing?

Yes.

g. What considerations need to be taken with regard to payloads?

The Kestrel-T UA has been evaluated statically and with flight tests to +4G/-2G, equating to a maximum payload of 15 pounds. All flights of this aircraft in the defined configuration will be accomplished with payloads under 15 pounds.

The Kestrel-T has been evaluated statically to +/- 4.6G at a gross weight of 48 pounds for the long wing configuration, equating to a maximum payload of 15 pounds. All flights of this aircraft in the defined configuration will be accomplished with payloads up to 15 pounds.

All payloads installed in the Kestrel-T UA are isolated from the aircraft power supply and feature required EMI shielding.

h. Will the aircraft perform any aerobatic maneuvers?

No. Flight operations are restricted to maneuvers permitted with Normal Category aircraft.

i. Flight Conditions (e.g., VFR, IFR, VMS, etc.)

VFR only.

4. AIRCRAFT CONFIGURATION. Attach three-view drawings or three-view dimensioned photographs of the aircraft (14 CFR § 21.193(b)(4)). Describe Unmanned Aircraft System configuration including ground control station. Include a description of aircraft/system performance characteristics including:

a. Wing span

105.125" – Short Wing Configuration

119.463" – Long Wing Outfitted with Flat Plate Wing Tips

125.463" – Long Wing Outfitted with Shaped Wing Tips

b. Length

78.75 in" (including spinner)

c. Power plant

RCS 180 – 30cc two-cycle w/CDI

Acceptable Propellers – Bambula 20" x 8", Bambula 20" x 10" &
Bambula 18" x 8"

d. Max gross take off weight

40 pounds including payload – Short Wing Configuration

48 pounds including payload – Long Wing Configurations

e. Fuel capacity

100 fluid ounces

f. Payload capacity

Maximum of 10.375 pounds – Short Wing Configuration

Maximum of 15.0 pounds – Long Wing Configurations

g. Max altitude

2500 feet

h. Endurance

3 hours 20 minutes maximum

i. Max airspeed

VNE 80 knots

j. Control/data frequencies

1. Piccolo Autopilot 900 MHZ
 - a. Aircraft command link
 - b. Aircraft telemetry data link
2. Payload Data Frequencies
 - a. 1.7 GHz L-Band
 - b. 2.4 GHz S-Band

k. Guidance and navigation control

1. Aircraft - Cloud Cap Technology, Inc. Piccolo Autopilot Firmware v2.1.0.i.
This is a COTS product.
2. Ground Station - Cloud Cap Technology, Inc. Operator Interface v2.1.0.h.
This is a COTS product.
3. Open UMI - DTI developed as a "reduced operator workload" UAS control package. This application utilizes the Cloud Cap Technology, Inc. COTS API for communications with a UAS using Cloud Cap Technology hardware, the same hardware used to control a UAS with the Operator Interface v2.1.0.h.
4. Remote Control Mode – The Cloud Cap Technology, Inc. autopilot system has a software bypass feature as part of the COTS product. There is no requirement for any software or computer to be running in order to fly a UAS in manual RC mode.

Table 5. Kestrel-T UAS Specifications

Table of Performance and Specifications		
Specifications	Configuration 1 – Short Wing	Configuration 2 – Long Wing
Wingspan	105.125 in	119.463 in w/Flat Plate Wing Tips 125.463 in w/Shaped Wing Tips
Wing Area	1839 sq in	2150 sq in w/Flat Plate Wing Tips 2254 sq in w/Shaped Wing Tips
Wing Chord	17.5 in	18.0 in
Wing Aspect Ratio	6.007	6.638 w/Flat Plate Wing Tips 6.984 w/Shaped Wing Tips
Tail Configuration	Conventional	
Horizontal Tail Span	38.0 in	
Horizontal Tail Area	361 sq in	430 sq in
Vertical Tail Span	12 in	
Vertical Tail Area	129 sq in	171.7 sq in
Fuselage Length	78.75 in, including spinner	
Fuselage Width and Height (Max)	6.6 in wide x 11 in high	
Overall Height	33 in, ground to top of vertical stabilizer	
Engine Type	RCS 180 - 30cc Two-Cycle IC w/CDI	
TBO	250 hours	
Propeller Type & Size(s)	Bambula 20 in dia. x 8 in pitch. Alternate Approved Propellers include: Bambula 20 in dia. x 10 in pitch and Bambula 18 in dia. x 8 in pitch	
Landing Gear	Tricycle	
Servos	High Torque, Metal Gear, Ball Bearing	
Capacities		
Empty Weight	29.625 lbs	33.0 lbs
Gross Weight	40.0 lbs max	48.0 lbs
Fuel Capacity	100 fluid oz	
Payload Capacity	Maximum 10.375 lbs	15.0 lbs
Performance		
Stall Speed	20 kts	
Operational Speed	30 – 60 kt	
Normal Cruise	50 – 55 kts	
Vne	80 kts	
Range, maximum	Approximately 165 nm	
Endurance, maximum	3 hours & 20 minutes, no reserve	
Altitude Range	Up to 2500 feet	
Launch and Recovery	Rise-Off-Ground (ROG), RC via Pilot	
Avionics		
Autopilot	Piccolo v2.1.0.i	
Ground Station	Piccolo v2.1.0.h Operator Interface	
Communications	900 MHz UHF	

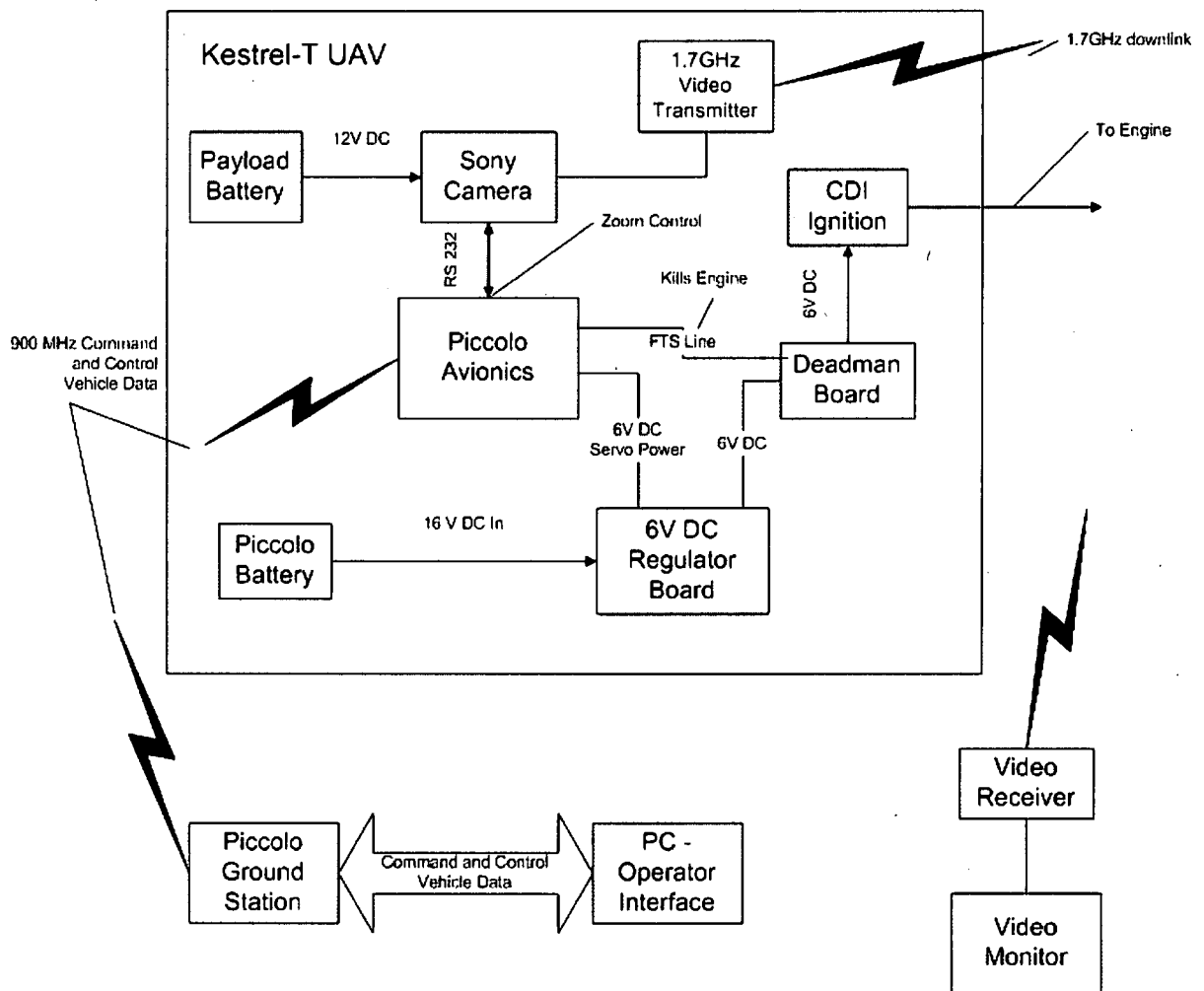


Figure 7. Kestrel-T UAS Communications Block Diagram

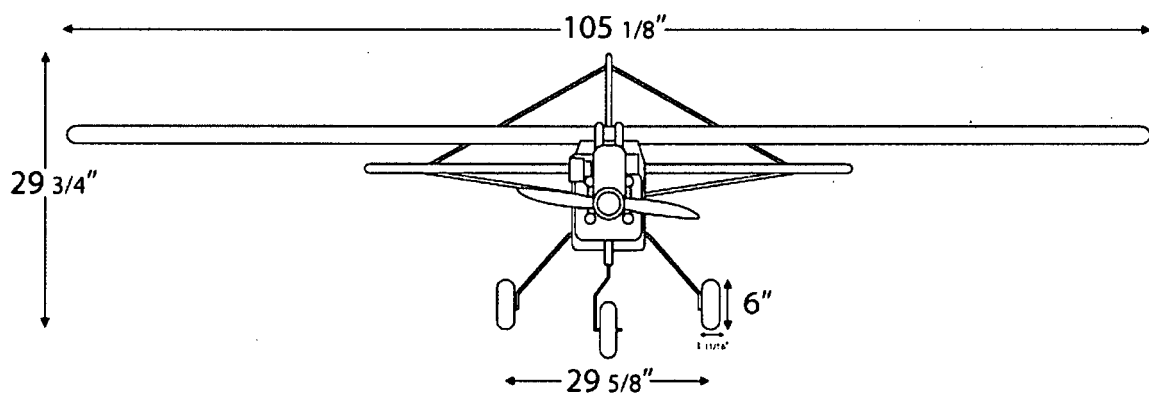
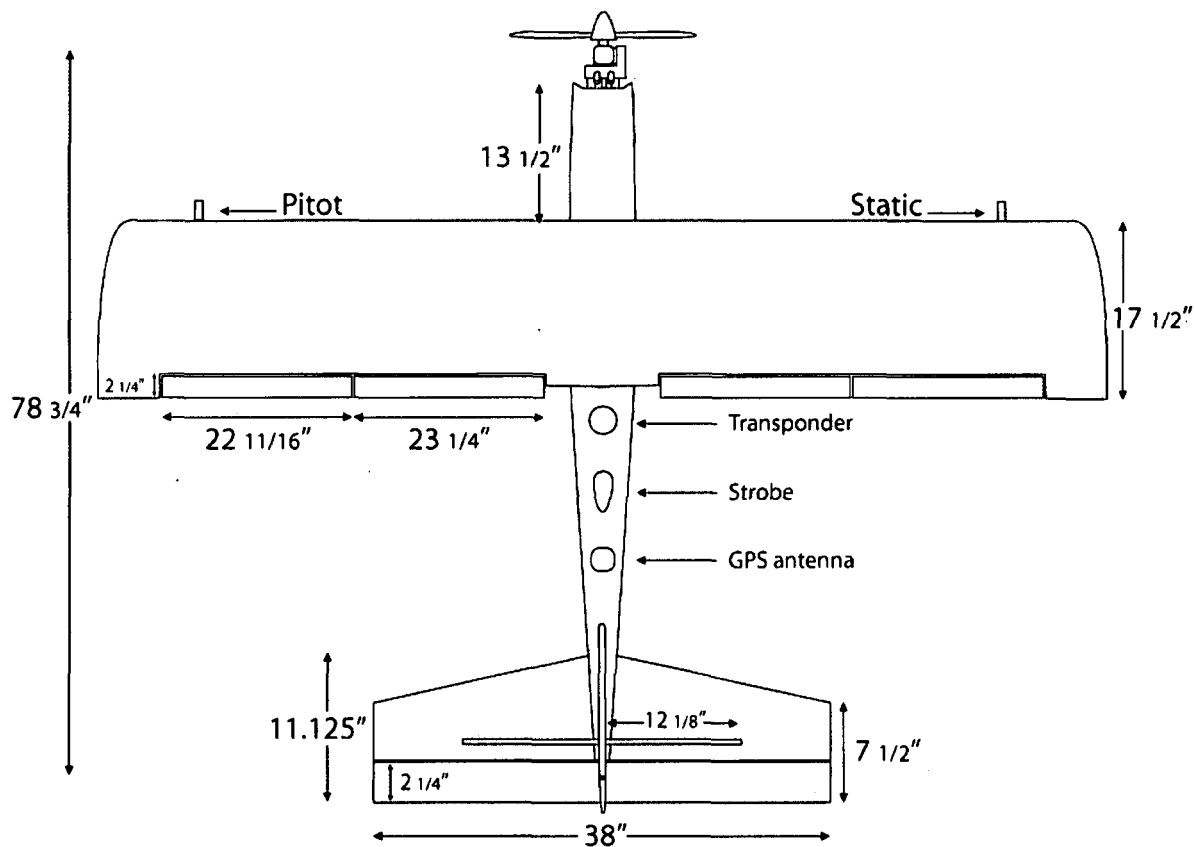
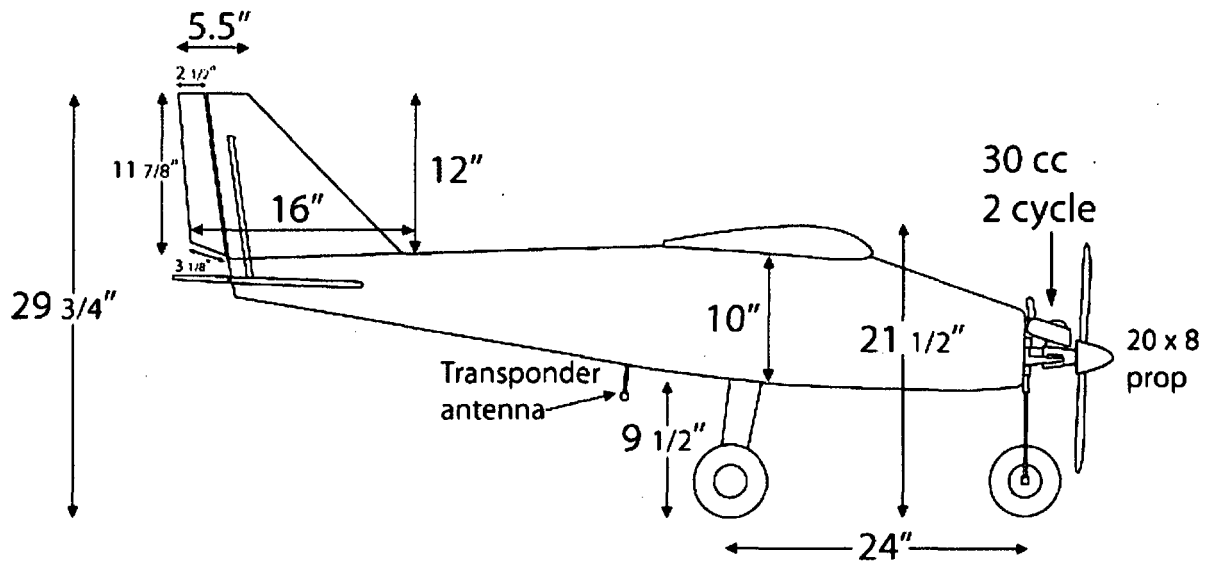


Figure 8. Front View – Short Wing Configuration





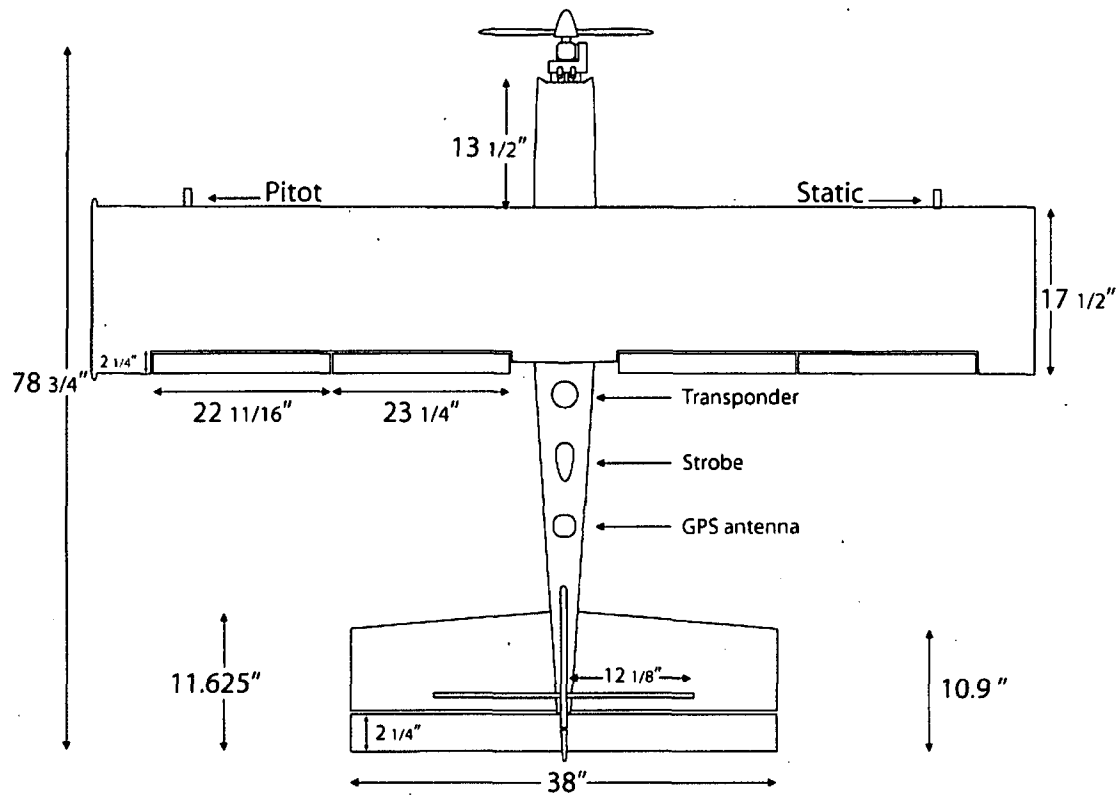


Figure 13. Top View – Long Wing Configurations Illustrating Larger Horizontal Stabilizer Area

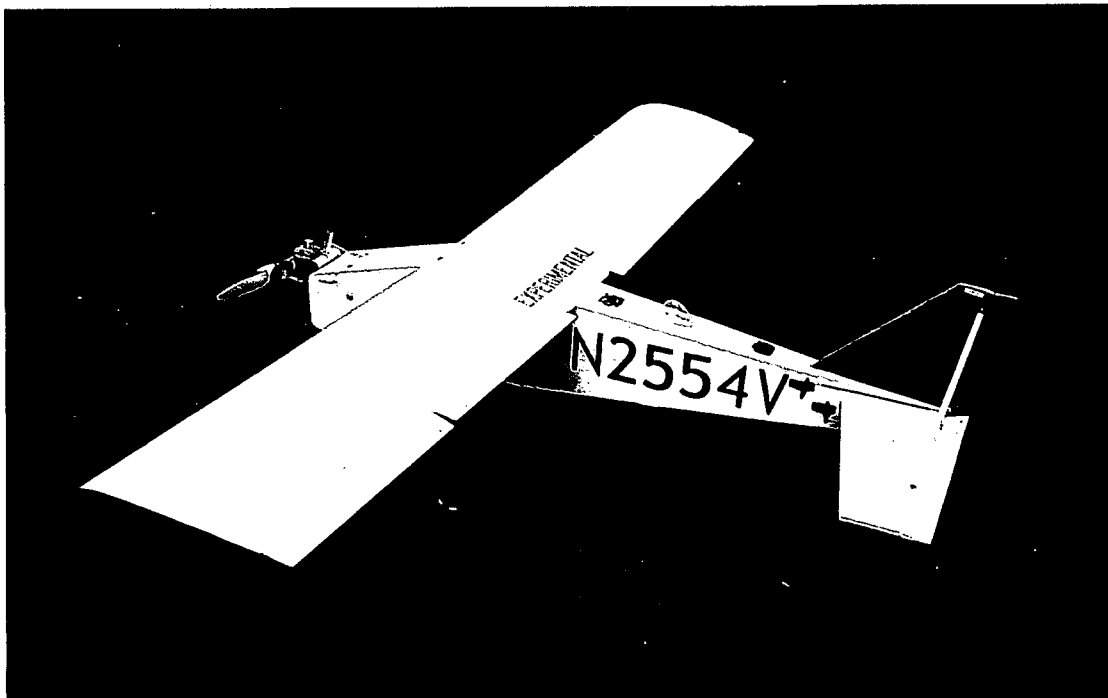


Figure 14. Kestrel-T Color Scheme and N Number Installation, Short Wing Configuration

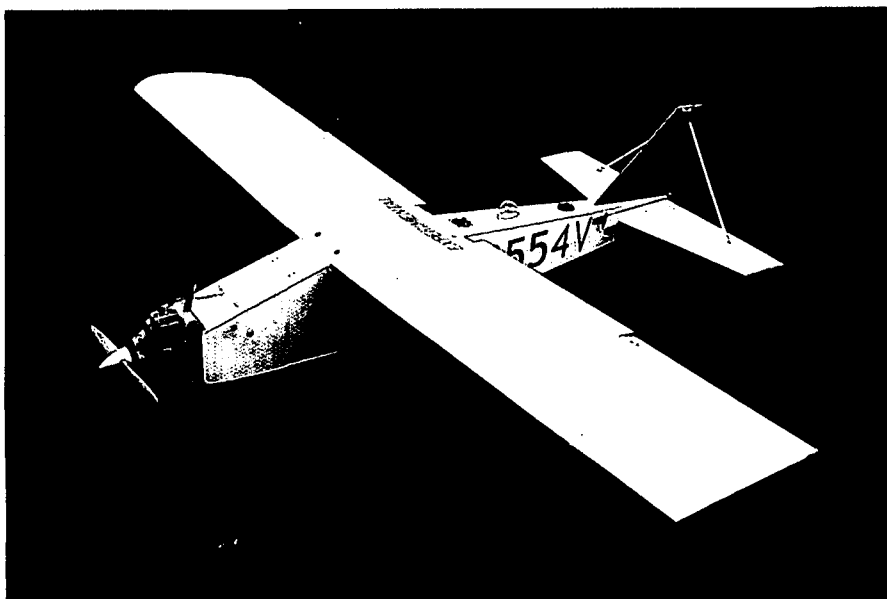


Figure 15. Kestrel-T – Front Quarter View, Short Wing Configuration

Payload

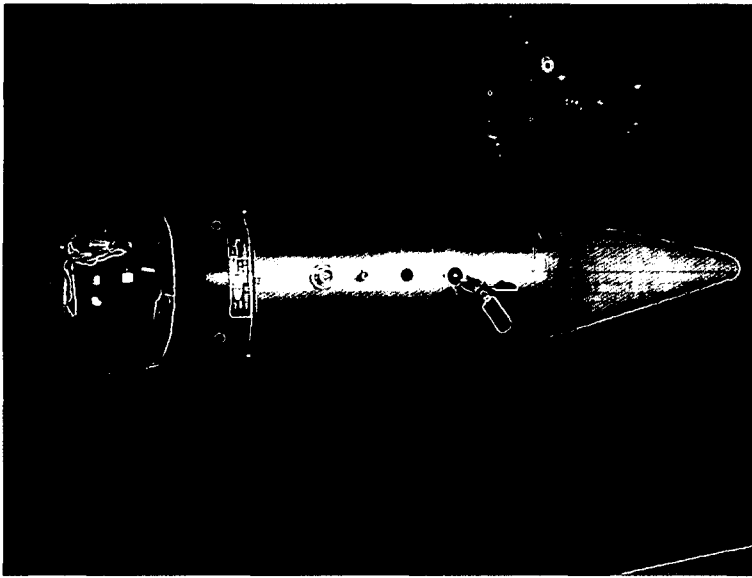


Figure 16. Pan-Tilt -Zoom Stabilized Camera

5. INSPECTION AND MAINTENANCE (14 CFR Part 91 Subpart E).

a. Describe the inspection and maintenance program that will be used to maintain the aircraft and related systems (includes ground stations and/or other support systems).

DTI developed and implemented an inspection and maintenance program that is approved by the FAA Washington Flight Standards District Office for the Kestrel-T UAS N2554V that received a Special Airworthiness Certificate on June 10, 2008.

This approved inspection and maintenance program will be used for all DTI UA systems.

b. Provide copy of flight manual, if applicable, current weight and balance report, equipment list.

The flight manual, weight and balance and equipment list will be as the certified Kestrel-T UAS, N2554V.

6. PILOT QUALIFICATION (14 CFR §§ 61.3, 61.5).

a. Describe the qualifications for each pilot.

All pilots will have received DTI UAS training and have demonstrated RC flight. Additionally, the Pilot in Command will hold a current Biennial Flight Review and third-class medical (second-class after 09/10/08).

Supplemental pilots, performing internal and external piloting duties, will also have completed or meet the DTI pilot training program and will hold third-class medicals (second-class after 09/10/08).

External Pilot and Telemetry Operator (Internal Pilot)

Bachelors of Science, University of Maryland – Computer and Information Sciences, minor in Aerospace Engineering

300 hours as FAA certificated Private Pilot Fixed Wing

30 Years of experience as RC flier and construction

Over 3 years experience as UAV pilot, builder and integrator, over 200 operational hours

100 hours documented as RC Pilot, many more undocumented

External Pilot

Bachelors: Professional Aeronautics ERAU

FAA Certificated, Commercial, Instrument, Multi-Engine, CFI, Ground Instructor, and 1800 hours as Pilot of Single Engine/Multi Engine aircraft. Fixed Wing

Certificate of completion from Advanced Ceramics Research for UAV Pilot Qualification Training for Silver Fox and Manta UAV systems

20 years experience as AP and 10 years experience as IA

External Pilot

63.5 Hours as FAA Certificated Private Pilot Fixed Wing

500 Hours as UAV External Pilot and Payload Operator Fixed Wing

2500 RC Flight time Fixed Wing

External Pilot

1000 Hours as RC pilot Fixed Wing

10 years maintenance experience on Avionics C-130 and P-3 Military

External Pilot

2003 hours as private pilot Fixed Wing

185.9 hours of UAV operation in support of U.S. Military operations Fixed Wing

Basic Flight Instructor for Ultra light

Working on LSA CFI currently

22 years involvement in RC construction and flight
Currently building Ultra light aircraft for FAA inspection/Certification

External Pilot and Telemetry (Internal Pilot)

300 Hours as RC Pilot Fixed Wing

b. Pilots must be qualified/certificated in the appropriate type of aircraft, i.e., rotorcraft, powered lift, fixed wing, etc.

Understood.

c. Describe internal training program to qualify pilots.

Pilots are trained and qualified by DTI. DTI developed a formal training and qualification program for pilots for its first certificated Kestrel-T UAS, N2554V. This training program is unchanged for this new UA.

Additionally three of our pilots received completion certifications from Advanced Ceramics Research, in Tucson in 2004 for flight of the Silver Fox and Manta UAs. This is the equivalent of a Manufacturers School.

d. Describe the qualifications and training of observers.

Observers are trained and qualified by DTI. DTI developed a formal training and qualification program for observers for its first certificated Kestrel-T UAS, N2554V.

7. AIRCRAFT MARKING (14 CFR Part 45). All Unmanned Aircraft System (UAS) are required to be registered and identified with the registration number. Aircraft must be marked in accordance with part 45.

Understood.

8. ATC TRANSPONDER AND ALTITUDE REPORTING SYSTEM EQUIPMENT AND USE (14 CFR § 91.215). Describe the aircraft altitude reporting system.

The Kestrel-T UA is currently configured with a TSO'd 4096 code mode C capable transponder. Installation and operation have been certified.

9. METHOD FOR SEE AND AVOID (14 CFR § 91.113a). In what manner, or by what means, will the requirement to "see and avoid" other aircraft be met? What performance will the chase plane have?

DTI flight test plans for the coming year do not require operations beyond line of sight of the pilot.

Prior to flight operations, ATC will be notified. ATC notification procedure is pending; to be provided by FAA during the current certification process. Our current method

of "Detect, See and Avoid" is to use qualified pilot(s) and observers on the ground to maintain separation all traffic.

DTI has developed communications protocols for use during flight operations. Current operations provide the right-of-way to any and all air traffic and protocols have been developed to ensure the safety of all other aircraft.

DTI is does not plan on using a chase plane for their planned series of tests.

Should future testing require a chase plane, DTI notify the FAA for modification to the current experimental certification.

DTI proposes this UA follow the Operating Limitations received on June 10, 2008 for DTI's first certificated UAS, N2554V.

10. SAFETY RISK MANAGEMENT. An applicant must provide a safety checklist that identifies and analyzes the hazards of UAS operations that are described in the program letter. Additional information is available by contacting the FAA Aviation Safety Inspector.

- Operations conducted from a private airport.
- Vehicle remains in line of sight of pilot(s) and observer(s).
- No bystanders are allowed when test operations are in progress.
- Test sponsors and observers are briefed on the operations and remain clear of launch and recovery areas.
- UA yields to any observed traffic per DTI's Traffic Avoidance procedures.
- Local VHF frequency is monitored to have situational awareness for approaching traffic.
- VFR only operations.
- Dead man circuit allows the engine to be switched off in emergencies.
- UA covered in international orange and white for optimal visibility by ground observers and air traffic.
- DTI controls all flights departing the locations and services UNICOM requests for inbound traffic.
- No structures are intentionally over flown.
- A team briefing occurs before each launch.
- DTI PIC will notify ATC of any issues per Operating Limitations.
- Fire extinguishers are available on premises.
- Medical emergency kits available on premises.
- DTI Flight Team notifies fire or medical emergency as required.

11. SYSTEM CONFIGURATION. Provide a description of aircraft system configuration and all on-board and ground-based equipment.

The DTI Kestrel-T Unmanned Air System consists of a small fixed wing aircraft integrated with a Cloud Cap Technology Inc. Piccolo Autopilot and a RCS 180 Engine.

A Cloud Cap Technology Inc. Ground Control Station including a second backup control station, Mobile laboratory facility, handheld communication radios used by the crew, generator sufficient to support ground station operation and miscellaneous antennas and cables complete the UAS.

The Piccolo autopilot operates in the 900 MHZ range and utilizes frequency hopping.

The Kestrel-T can support a payload of approximately 10 pounds. The aircraft is of conventional design, primarily fabricated of wood and composite materials, with a plastic covering. The aircraft features conventional landing gear with a steerable nose wheel and main gear legs of carbon fiber construction.

Electrical power to the aircraft autopilot and flight systems is supplied by a 16 volt Lithium-Polymer battery with a capacity of 2000 milliamp-hours.

ATC transponder, encoder and lighting are powered by a separate Lithium-Polymer battery from a separate circuit, also of 2000 milliamp-hours capacity.

Battery life is sufficient, with adequate safety margins, for proposed flight durations and has been verified under actual flight conditions.

12. SYSTEM SAFETY - FLIGHT TERMINATION AND LOST LINK. What is the expectation of aircraft "Flight" if fuel is starved? Briefly describe/explain aircraft lost link and emergency recovery procedures. Provide a brief explanation of the flight termination system (FTS).

Loss of Engine:

In the event of a loss of engine, the pilot will observe the aircraft slow down as the autopilot attempts to maintain altitude. Engine exhaust noise can be heard from anywhere within the proposed flight box and the absence of such is also noted by the pilot. Additionally, the telemetry operator will be alerted to a loss of rpm and will call the pilot to confirm via the flight team radios.

Loss of engine does not cause a loss of flight however. The pilot simply takes control of the aircraft and flies the aircraft to a landing within the flight box.

Lost Link:

DTI's documented procedures are to program the autopilot to command the UA to fly to a loss of communications (LOC) waypoint and loiter, fly a circular flight path centered, on this point.

Upon detecting a LOC condition, the vehicle will head towards the LOC waypoint.

The internal pilot will receive an indication of LOC and announce it to the flight team.

External personnel will confirm that the UA is headed towards the LOC waypoint.

Once the UA is headed to the LOC location, the flight team follows the documented LOC checklist to attempt to regain communications with the vehicle.

Upon arrival to the LOC location the vehicle enters an orbit at the commanded altitude, speed and radius. The vehicle will remain in this orbit until, a) communications are reestablished and the UA is landed or b) the vehicle exhausts its fuel reserve.

Loss of Servo Voltage:

Servo voltage is monitored in real-time by telemetry. In the event of loss of servo voltage, the engine may be stopped via a signal from telemetry. The internal pilot will notify the flight team of the loss of servo power. External personnel will determine the best time to stop the engine and instruct the internal pilot to issue the engine kill command.

13. COMMAND AND CONTROL. Provide a brief description of the system and/or procedures for command and control of the UAS.

The Kestrel-T UAS uses a Cloud Cap Technology, Inc. COTS autopilot system. DTI has developed detailed checklist to cover all aspects of flight proposed for the UAS.

In brief:

- DTI developed procedures and checklists for their first certificated UAS, N2554V, to insure proper UAS setup and configuration for safety of flight. These procedures and checklists will be used for this UA.
- The Kestrel-T UAS requires an external pilot for launch and recovery.
- Once airborne the UA may be switched to autopilot and commanded to fly a route or loiter configured in the Piccolo ground station. It is flown by the internal pilot.
- At any time the pilot may override any test step to insure the safety of air traffic or ground personnel following DTI developed protocols.
- At any time any persons on the flight team can order halting of operations for safety reasons. In this event, the pilot takes appropriate measures following DTI developed protocols.

14. CONTROL STATIONS. Provide a brief description of the ground/airborne stations used to control the UAS.

The ground station used to control the Kestrel-T UAS is a COTS product from Cloud Cap Technology, Inc., consisting of:

- Primary Ground Station with:
 - Flight computer with Piccolo Command Center (PCC).
 - UHF transceiver with internal backup battery.
 - Communications port to PC.
 - UHF antenna, amplifiers and cables as required.
 - External hand controller for manual RC flight.
 - UPS backup for all flight systems.
- Secondary Ground Station with:
 - All components as Primary Ground Station.
- Open UMI Workstation
 - Test workstation for DTI developed software.

Piccolo's ground station is based upon the same hardware that makes up the avionics package. It manages the communication link to one or more avionics systems, interfaces to the external hand controller, and provides a command and control stream to the internal pilot through the PCC.

A DTI developed ground station software suite will be tested by DTI using the Kestrel-T UAS, called Open UMI. Open UMI is an application designed as a "reduced operator workload" UAS control package. This application utilizes the Cloud Cap Technology, Inc. COTS API for communications with a UA using Cloud Cap Technology hardware, the same hardware used to control a UA with the PCC.

15. CONTROL FREQUENCIES. Provide a description/listing of the frequencies used to control the UAS.

This Control System uses the Cloud Cap Autopilot and Ground Control Station operating 902 to 928 MHZ. for command and control of the vehicle.

Payload video is transmitted on 1.7GHz and 2.4 GHz.



U.S. Department
of Transportation
**Federal Aviation
Administration**

800 Independence Ave., S.W.
Washington, D.C. 20591

JUL 3 0 2007

Exemption No. 9430
Regulatory Docket No. FAA-2007-28667

Mr. Donald R. Jackson
Maryland Unit
Defense Technologies, Inc.
21795-C Shangri-La Drive
Lexington Park, MD 20653

COPY

Dear Mr. Jackson:

This letter is to inform you that we have granted your request for exemption. It transmits our decision, explains its basis, and gives you the conditions and limitations of the exemption, including the date it ends.

The Basis for Our Decision

On July 2, 2007, you petitioned the Federal Aviation Administration (FAA) on behalf of Defense Technologies, Inc. (Defense Technologies), for an exemption from §§ 91.9(b) and 91.203(a)(1) and (2) of Title 14, Code of Federal Regulations (14 CFR). That exemption, if granted, would allow Defense Technologies to operate unmanned aircraft systems (UASs) that do not carry and display the aircraft's airworthiness, certification, and registration documents required by part 91.

The FAA has determined that good cause exists for not publishing a summary of the petition in the Federal Register because the requested exemption would not set a precedent, and any delay in acting on this petition would be detrimental to Defense Technologies.

The FAA has issued a grant of exemption in circumstances similar in all material respects to those presented in your petition. In Grant of Exemption No. 8607 (copy enclosed), the FAA found that it is unnecessary to carry and display the airworthiness, certification, and registration documents in UASs for the operations described by the petitioner. The original

E-2007-0859

1. P. 1

V-200

intent of the subject regulations was to display the airworthiness and registration documents so they would be easily available to the FAA inspectors and passengers.

Having reviewed your reasons for requesting an exemption, I find that—

- they don't differ materially from those presented by the petitioner in the enclosed grant of exemption;
- the reasons stated by the FAA for granting the enclosed exemption also apply to the situation you present; and
- a grant of exemption is in the public interest.

Our Decision

Under the authority contained in 49 U.S.C. 40113 and 44701, which the FAA Administrator has delegated to me, I hereby grant Defense Technologies, Inc., an exemption from 14 CFR §§ 91.9(b) and 91.203(a)(1) and (2) to the extent necessary to operate UASs without carrying the airworthiness, certification, and registration documents required by part 91, subject to the conditions and limitations described below.

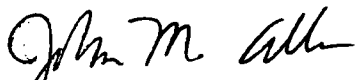
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Conditions and Limitations

1. The documents required under §§ 91.9 and 91.203 must be available to the pilot in command of the UASs anytime the aircraft is operating.
2. Those documents required under §§ 91.9 and 91.203 must be made available within 10 days to any FAA, U.S. Department of Defense, or law enforcement official.

This exemption terminates on July 31, 2009, unless sooner superseded or rescinded.

Sincerely,



John M. Allen
Acting Director, Flight Standards
Service

Enclosure

Figure 7. Kestrel-T UAS Communications Block Diagram

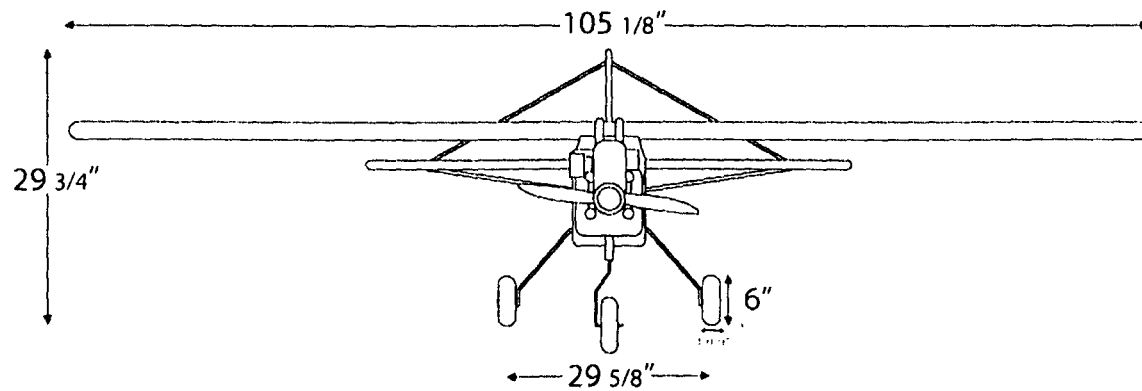


Figure 8. Front View – Short Wing Configuration



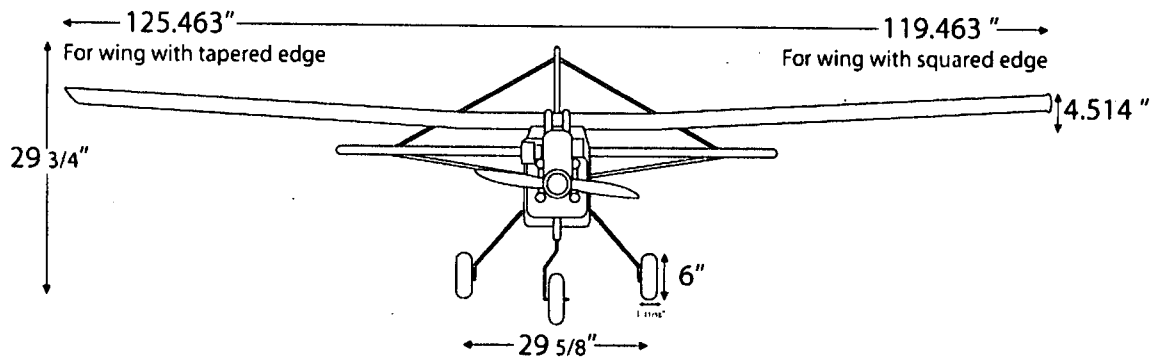


Figure 11. Front View – Long Wing Configurations
Right Wing Showing Shaped Wing Tip, Left Wing Showing Flat Plate Wing Tip

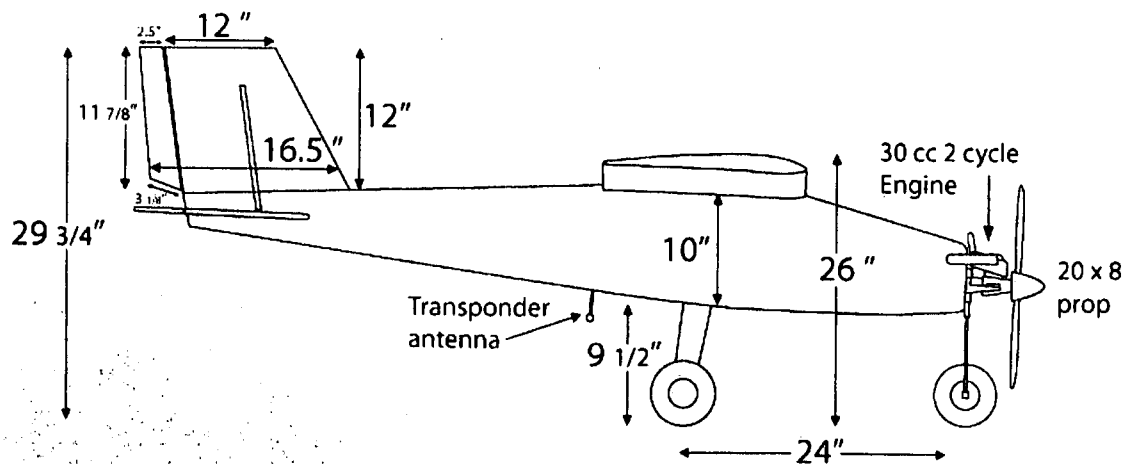


Figure 12. Side View – Long Wing Configurations Illustrating Larger Vertical Stabilizer Area

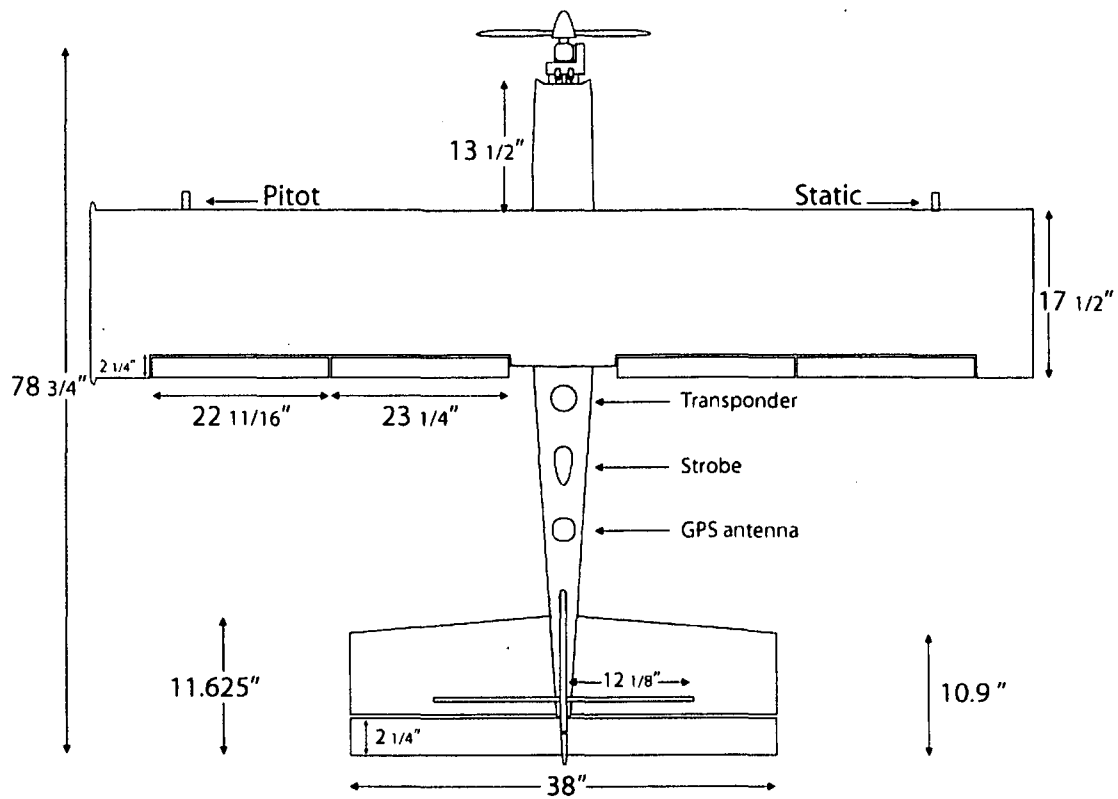


Figure 13. Top View – Long Wing Configurations Illustrating Larger Horizontal Stabilizer Area

UNITED STATES OF AMERICA
DEPARTMENT OF TRANSPORTATION - FEDERAL AVIATION ADMINISTRATION
SPECIAL AIRWORTHINESS CERTIFICATE

CANCELLED
JAN 9 2009

A	CATEGORY/DESIGNATION EXPERIMENTAL (UNMANNED AIRCRAFT)	
	PURPOSE Research & Development/Mkt. Survey/Crew Training	
B	MANUFACTURER	NAME N/A
		ADDRESS N/A
C	FLIGHT	FROM N/A
		TO N/A
D	N-2554V	SERIAL NO. 003
	BUILDER Defense Technologies, Inc.	MODEL/Kestral - T
DATE OF ISSUANCE June 10, 2008		EXPIRY June 9, 2009
OPERATING LIMITATIONS DATED 06/10/2008 ARE PART OF THIS CERTIFICATE		
E	SIGNATURE OF FAA REPRESENTATIVE	DESIGNATION OR OFFICE NO.
	Henry K. Cooper	ANE-MIDO-44

Any alteration, reproduction or misuse of this certificate may be punishable by a fine not exceeding \$1,000 or imprisonment not exceeding 3 years, or both. THIS CERTIFICATE MUST BE DISPLAYED IN THE AIRCRAFT IN ACCORDANCE WITH APPLICABLE TITLE 14, CODE OF FEDERAL REGULATIONS (CFR).

A	This airworthiness certificate is issued under the authority of Public Law 104-6, 49 United States Code , (USC) 44704 and Title 14 Code of Federal Regulations (CFR).
B	The airworthiness certificate authorizes the manufacturer named on the reverse side to conduct production flight tests, and only production flight tests, of aircraft registered in his name. No person may conduct production flight tests under this certificate: (1) Carrying persons or property for compensation or hire; and/or (2) Carrying persons not essential to the purpose of the flight.
C	This airworthiness certificate authorizes the flight specified on the reverse side for the purpose shown in Block A.
D	This airworthiness certificate certifies that as of the date of issuance, the aircraft to which issued has been inspected and found to meet the requirements of the applicable CFR. The aircraft does not meet the requirements of the applicable comprehensive and detailed airworthiness code as provided by Annex 8 to the Convention On International Civil Aviation. No person may operate the aircraft described on the reverse side: (1) except in accordance with the applicable CFR and in accordance with conditions and limitations which may be prescribed by the Administrator as part of this certificate; (2) over any foreign country without the special permission of that country.
E	Unless sooner surrendered, suspended, or revoked, this airworthiness certificate is effective for the duration and under the conditions prescribed in 14 CFR, Part 21, Section 21.181 or 21.217.

6/10/2008



New Cumberland Manufacturing Inspection District Office
Bldg. 201, Rm. 102,
400 Airport Road
New Cumberland, PA 17070-3419

CANCELLED

Operating Limitations
Experimental: Research and Development, Market Survey, and/or Crew Training

JAN 09 2009

Registered Owner Name: Defense Technologies, Inc.	Aircraft Builder: Defense Technologies, Inc.
Registered Owner Address: 21795 Shangri-La Dr Lexington Park Maryland 20653	Year Manufactured: 2006
Aircraft Description: Kestrel-T: Giant Scale Rc Size Standard Wing And Tail Configuration Tricycle Gear Configuration	Aircraft Serial Number: 003
Aircraft Registration: N2554V	Aircraft Model Designation: Kestrel – T
	Engine: RCS 180
	Propeller: Bambula 20 x 8 wood

The following conditions and limitations apply to all unmanned aircraft system (UAS) flight operations for the Kestrel – T, while operating in the National Airspace System (NAS).

1. General Information.

a. Integrated system. For the purposes of this special airworthiness certificate and operating limitations, the Kestrel – T, operated by Defense Technologies, Inc., is considered to be an integrated system. The system is composed of the following:

- (1) Kestrel – T, serial number 003,
- (2) UAS control station(s), that is, fixed, mobile, ground-based.
- (3) Telemetry, launch, and recovery equipment.

CANCELLED

6/10/2008

JAN 09 2009

(4) Communications and navigation equipment, including ground and/or airborne equipment used for command and control of the Kestrel – T.

(5) Ground or airborne equipment used for communication with other members of the flight crew, observers, air traffic control (ATC), and other users of the NAS.

b. Compliance with 14 CFR part 61 (Certification: Pilots, Flight Instructors, and Ground Instructors) and part 91 (General Operating and Flight Rules). Unless otherwise specified in this document, the UA pilot-in-command (PIC) and Defense Technologies, Inc., must comply with all applicable sections and parts of 14 CFR including, but not limited to, parts 61 and 91.

c. Operational requirements.

(1) No person may operate this UAS for other than the purpose of research and development, market survey, and/or crew training, to accomplish the flight operation outlined in Defense Technologies, Inc., program letter dated 6/10/2008, which describes compliance with § 21.193(d), Experimental certificates: General, and has been made available to the UA PIC.

(2) This UAS must be operated in accordance with applicable air traffic and general operating rules of part 91 and all additional limitations herein prescribed under the provisions of § 91.319(i), Aircraft having experimental certificates: Operating limitations.

(3) Defense Technologies, Inc., must accumulate at least 50 flight hours under its experimental airworthiness certificate before the aircraft can be used for market surveys, sales demonstrations, and customer crew training in accordance with § 21.195(d).

d. UA condition. The UA PIC must determine that the UA is in a condition for safe operation and in a configuration appropriate for the purpose of the intended flight.

e. Multiple-purpose operations. When changing between operating purposes of a multiple purpose certificate, the operator must determine that the aircraft is in a condition for safe operation and appropriate for the purpose intended. A record entry will be made by an appropriately rated person (that is, an individual authorized by the applicant and acceptable to the FAA) to document that finding in the maintenance records.

f. Operation exceptions. No person may operate this UA to carry property for compensation or hire (§ 91.319(a)(2)).

g. UA markings.

(1) This UA must be marked with its U.S. registration number in accordance with part 45 or alternative marking approval issued by the FAA Production and Airworthiness Division, AIR-200.

(2) This UA must display the word *Experimental* in accordance with § 45.23(b), Display of marks, unless otherwise granted an exemption from this requirement.

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h. Required documentation. Before conducting the initial flight of the Kestrel – T, Defense Technologies, Inc., must forward a copy of the Kestrel – T, program letter, special airworthiness certificate, and operating limitations to the following personnel:

(1) Lynda Otting, FAA Air Traffic Representative, Eastern Service Center, System Support, 1701 Columbia Ave, College Park, GA 30337, telephone (404) 305-5577, email lynda.g.otting@faa.gov.

(2) Richard Posey, Aviation Safety Inspector, Production and Airworthiness Division, AIR-200, 800 Independence Ave, SW, Washington, DC 20591, telephone (202) 267-9538, email richard.posey@faa.gov.

i. Change in registrant address. Section 47.45, Change of address, requires that the FAA Aircraft Registry be notified within 30 days of any change in the aircraft registrant's address. Such notification is to be made by providing AC Form 8050-1, Aircraft Registration Application, to the FAA Aircraft Registration Branch (AFS-750) in Oklahoma City, Oklahoma.

j. Certificate display and manual availability. The airworthiness and registration certificates must be displayed, and the aircraft flight manual must be available to the pilot, as prescribed by the applicable sections of 14 CFR, or as prescribed by an exemption granted in accordance with 14 CFR part 11, Investigative and Enforcement Procedures, to Defense Technologies, Inc.

2. Program Letter. The Kestrel – T, program letter, dated 6/10/2008, will be used as a basis for determining the operating limitations prescribed in this document. All flight operations must be conducted in accordance with the provisions of this document.

3. Initial Flight Testing.

a. Requirements. Flight operations must be conducted within visual line of sight of the pilot/observer. Initial flight testing shall be considered completed upon accumulation of a minimum of 25 flight hours. Following satisfactory completion of initial flight testing, the operations manager or chief pilot must certify in the records that the aircraft has been shown to comply with § 91.319(b). Compliance with § 91.319(b) must be recorded in the aircraft records with the following, or a similarly worded, statement:

I certify that the prescribed flight test hours have been completed and the aircraft is controllable throughout its normal range of speeds and throughout all maneuvers to be executed, has no hazardous operating characteristics or design features, and is safe for operation. The following aircraft operating data has been demonstrated during the flight testing: speeds Vx _____, and Vy _____, and the weight _____ and CG location _____ at which they were obtained.

b. Aircraft operations for the purpose of market surveys, sales demonstrations, and customer crew training. These operations cannot be performed until 50 flight

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hours have been accomplished. An entry in the maintenance records is required as evidence of compliance.

4. Authorized Flight Operations Area.

a. Description of the authorized flight operations area. The flight operations area is located in Clements, MD. Clements Field, 4MD4 is a private airport located at:

Latitude 38° 20.408N
Longitude 76° 44.432W

b. Flight test area. The flight operations area authorized for the UA will be referred to as the flight test area, and is depicted graphically below.

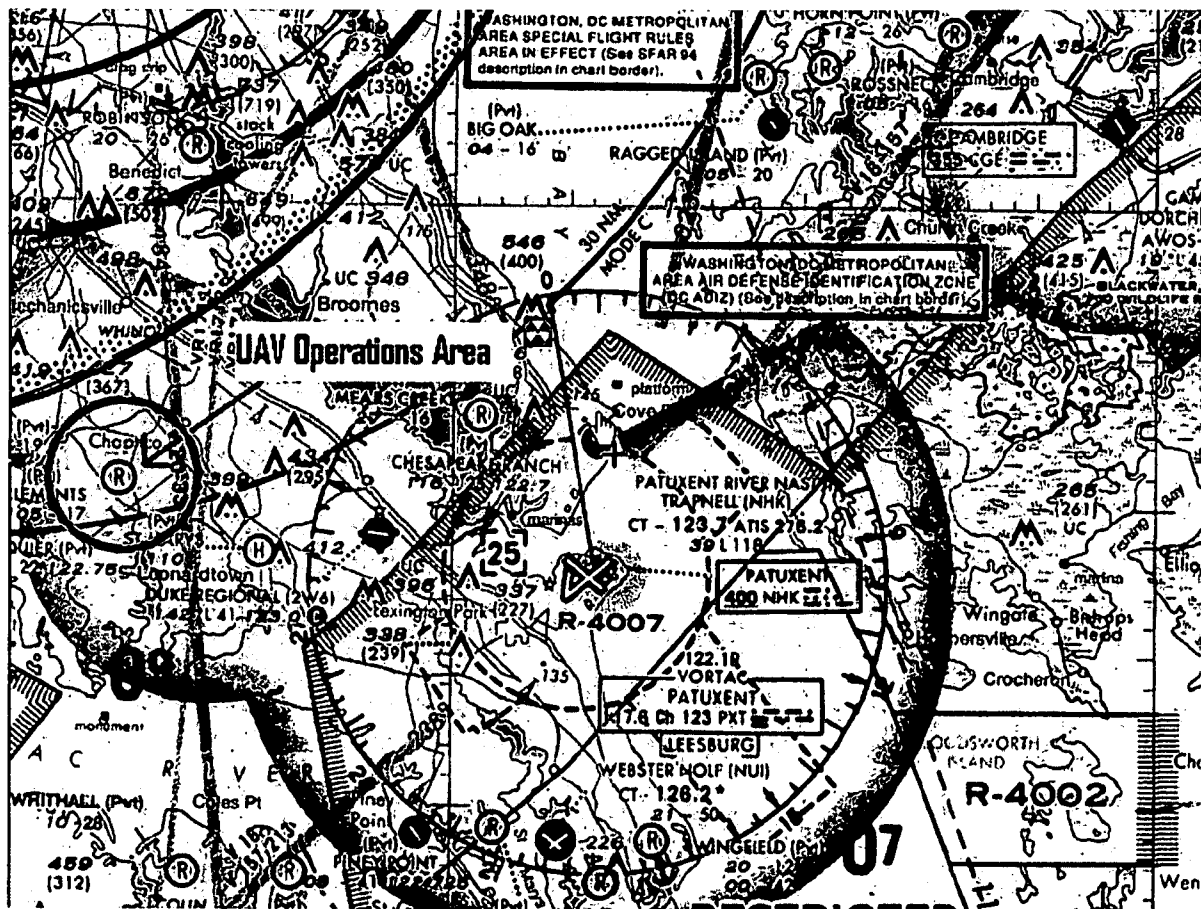


Figure 1. Aeronautical Chart

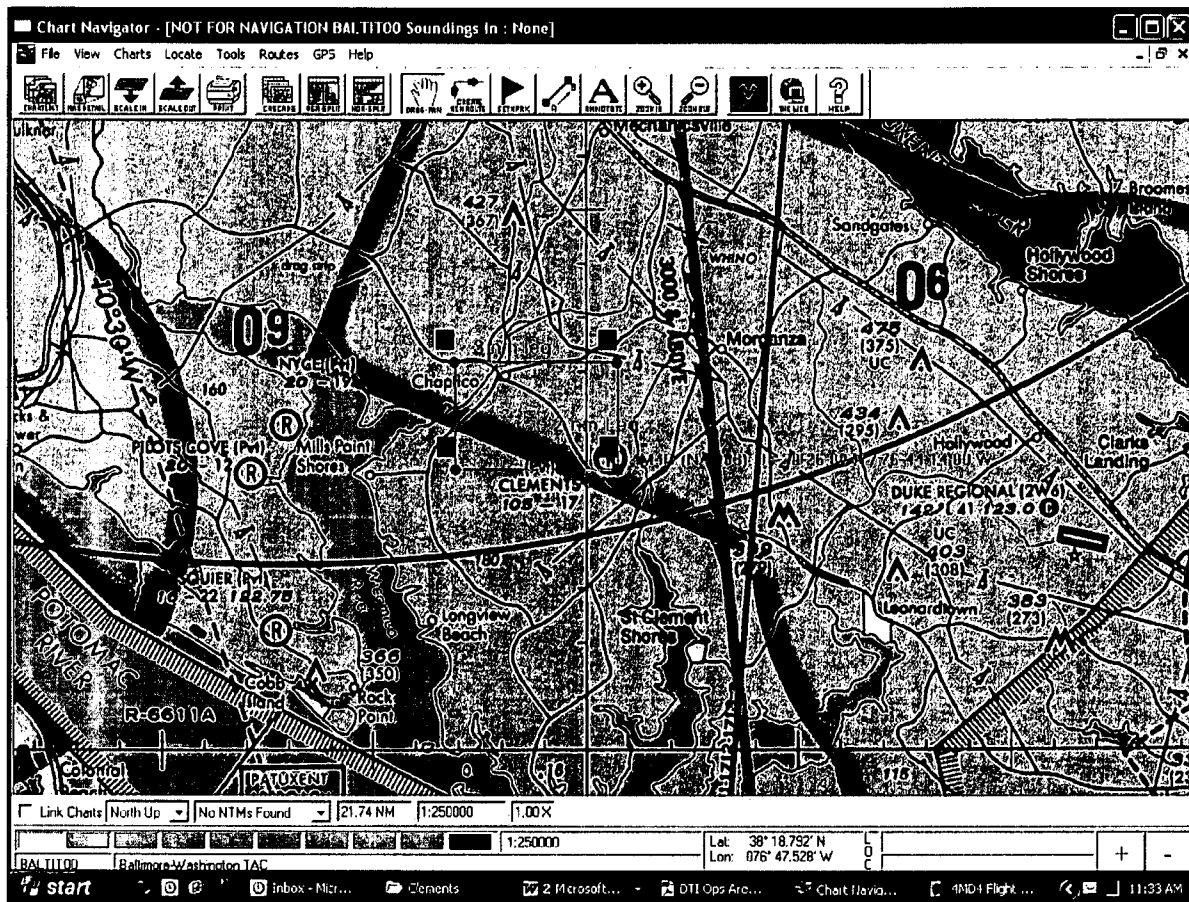


Figure 2. Kestrel – T Flight Test Area

Waypoints Kestrel-T Experimental Flight Box - 4MD4 Operations		
Point Name	Latitude	Longitude
Point 1	38° 20.148' N	076° 44.241' W
Point 2	38° 22.138' N	076° 44.263' W
Point 3	38° 22.145' N	076° 48.098' W
Point 4	38° 20.156' N	076° 48.074' W

c. Authorized flight times and conditions. All flight operations must be conducted during daylight hours under visual flight rules (VFR). VHF/UHF monitoring or communication with Potomac TRACN (PCT) is not required. The following conditions are included in your operating limitations:

- (1) Operations shall be conducted below 1000 ft AGL.
- (2) Operations shall be contained in an area west and north of 4MD4, not to exceed 1nm north and 1nm west of the airport and must remain clear of the ADIZ.
- (3) The UAS PIC must notify the PCT TRACON Operations Manager

at phone (540) 349-7541 at least 30 minutes prior to launch and immediately upon termination of operations each day. DTI must provide PCT with an on-site contact name and phone number for two-way communications with ATC for each flight.

(4) The Kestrel UAS shall transmit the assigned beacon code 0377 and altitude information (Mode-C) for the duration of the flight. Any failure of the transponder or inability to properly squawk the assigned code shall be reported to PCT and flight operations shall be terminated.

(5) The Kestrel pilot shall have the capability of maneuvering the UAS or suspending operations as instructed by PCT.

(6) A Notice to Airmen (NOTAM) shall be issued when UAS operations are being conducted. (Note: Do not use 'distant' or D here as the NOTAM classification and codes have recently been changed.) DTI shall contact the Automated Flight Service Station (FSS) no less than 48 hours prior to the operation and provide:

- i) Name, address, and telephone number of the person giving notice.
- ii) Nature of the activity.
- iii) Date, time, and duration of the activity.
- iv) Size of the affected area in nautical mile radius and affected altitudes.
- v) Location of center of affected area in relation to airport.
- vi) Location of center of affected area in relation to nearest VOR/DME or VORTAC.

(7) Fuel quantity shall be limited to that necessary for one (1) hour flight time and a 30 minute reserve.

d. Criteria for remaining in the flight test area. The UAS PIC must ensure all UA flight operations remain within the lateral and vertical boundaries of the flight test area. Furthermore, the UAS PIC must take into account all factors that may affect the capability of the UA to remain within the flight test area. This includes, but is not limited to, considerations for wind, gross weight, and glide distances.

e. Incident/accident reporting. Any incident/accident and any flight operation that transgresses the lateral or vertical boundaries of the flight test area or any restricted airspace must be reported to the FAA within 24 hours. This information must be reported to the Unmanned Aircraft Program Office, AIR-160. AIR-160 can be reached by telephone at 202-385-4636 and fax at 202-385-4651. Accidents must be reported to the National Transportation Safety Board (NTSB) per instructions contained on the NTSB Web site: www.nts.gov. Further flight operations must not be conducted until the accident/incident is reviewed by AIR-160 and authorization to resume operations is provided to Defense Technologies, Inc.

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5. UA Pilots and Observers.

a. UA PIC roles and responsibilities.

- (1) The UA PIC must perform crew duties for only one UA at a time.
- (2) All flight operations must have a designated UA PIC. The UA PIC has responsibility over each flight conducted and is accountable for the UA flight operation.
- (3) The UA PIC is responsible for the safety of the UA as well as persons and property along the UA flight path. This includes, but is not limited to, collision avoidance and the safety of persons and property in the air and on the ground.
- (4) The UA PIC must avoid densely populated areas (§ 91.319) and exercise increased vigilance when operating within or in the vicinity of published airway boundaries.
- (5) The UA will not be flown beyond one (1) nm/line-of-sight of the external pilot.

b. UA PIC certification and ratings requirements.

- (1) The UA PIC must hold and be in possession of, at a minimum, an FAA private pilot certificate, with an airplane, rotorcraft, or powered-lift category; and single- or multiengine class ratings appropriate to the type of UA being operated.
- (2) The UA PIC must have and be in possession of a valid third-class (or higher) airman medical certificate issued under 14 CFR part 67, Medical Standards and Certification. A valid second-class airman medical certificate is required after 9/10/2008.

c. UA PIC currency, flight review, and training.

- (1) No person may act as pilot in command of an unmanned aircraft unless that person has made at least three takeoffs and three landings in manned aircraft within the preceding 90 days acting as the sole manipulator of the flight controls.
- (2) The UA PIC must have a flight review in manned aircraft every 24 calendar months in accordance with § 61.56, Flight review.
- (3) The UA PIC must maintain currency in unmanned aircraft in accordance with Defense Technologies, Inc., procedure: DTI UAS Biennial Flight Review V 1.0, DTI-UAS-BFR-01.
- (4) The UA PIC must have a flight review in unmanned aircraft every 24 calendar months in accordance with Defense Technologies, Inc., procedures.

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(5) All UA PICs must have successfully completed applicable Defense Technologies, Inc., procedure, DTI UAS Pilot Training DTI-UAS-PIL-TRA-SYL-01 training for the UAS.

d. Supplemental UA pilot roles and responsibilities.

(1) Any additional UA pilot(s) assigned to a crew station during UA flight operations will be considered a supplemental UA pilot.

(2) A supplemental UA pilot assists the PIC in the operation of the UA and may do so at the same or a different control station as the PIC. The UA PIC will have operational override capability over any supplemental UA pilots, regardless of position.

(3) A supplemental UA pilot must perform crew duties for only one UA at a time.

e. Supplemental UA pilot certification. The supplemental UA PIC need not be a certificated pilot, but must have successfully completed a recognized private pilot ground school program.

f. Supplemental UA pilot currency, flight review, and training.

(1) All UA pilots must maintain currency in unmanned aircraft in accordance with DTI UAS Pilot Training DTI-UAS-PIL-TRA-SYL-01.

(2) All UA pilots must have a flight review in unmanned aircraft every 24 calendar months in accordance with Defense Technologies, Inc., procedures.

(3) All UA pilots must have successfully completed Defense Technologies, Inc., training in accordance with DTI UAS Pilot Training DTI-UAS-PIL-TRA-SYL-01.

g. Observer roles and responsibilities. The task of the observer is to provide the UA PIC(s) with instructions to maneuver the UA clear of any potential collision with other traffic. To satisfy these requirements—

(1) The observer must perform crew duties for only one UA at a time.

(2) At no time will the observer permit the UA to operate beyond the line-of-sight necessary to ensure maneuvering information can be reliably determined.

(3) At no time will the observer conduct his/her duties more than 1 nm laterally and 1000 ft vertically from the UA.

(4) An observer must maintain continuous visual contact with the UA to discern UA attitude and trajectory in relation to conflicting traffic.

(5) Observers must continually scan the airspace for other aircraft that pose a potential conflict.

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(6) All flight operations conducted in the flight test area must have an observer to perform traffic avoidance and visual observation to fulfill the see-and-avoid requirement of § 91.113, Right-of-way rules: Except water operations.

h. Observer certification.

(1) All observers must either hold, at a minimum, an FAA private pilot license or must have successfully completed specific observer training acceptable to the FAA. An observer does not require currency as a pilot.

(2) All observers must have in their possession a valid third-class (or higher) airman medical certificate issued under part 67. A valid second-class airman medical certificate is required after 9/10/2008.

i. Observer training.

(1) All observers must be thoroughly trained, be familiar with, and possess operational experience with the equipment being used. Such training is necessary for observation and detection of other aircraft for collision avoidance purposes as outlined in Defense Technologies, Inc., program letter.

(2) All observers must have successfully completed applicable Defense Technologies, Inc., training in accordance with DTI UAS Observer Training Manual V 1.1, DTI-UAS-ODS-TNG-MAN-02.

6. Equipage.

a. The UAS must be equipped with an operable transponder with Mode C and two-way communications equipment allowing communications between the UA pilot, observers, all UAS control stations.

b. The UA must be equipped with operable strobe/anti-collision lights. Strobe/anti-collision lights must be illuminated during all operations.

7. Communications.

a. Before UA flights. Before conducting operations, the frequency spectrum used for operation and control of the UA must be approved by the Federal Communications Commission or other appropriate government oversight agency.

b. During UA flights.

(1) Appropriate air traffic frequencies must be monitored during flight operations.

(2) All crew members must maintain two-way communications with each other during all operations. If unable to maintain two-way communication, the UA PIC will expeditiously return the UA to its base of operations while remaining within the flight test area and conclude the flight operation.

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8. Flight Conditions.

a. Daylight operations. All flight operations must be conducted during daylight hours in visual meteorological conditions (VMC), including cloud clearance minimums as specified in § 91.155, Basic VFR weather minimums. Flight operation in instrument meteorological conditions (IMC) is not permitted.

b. Prohibitions.

(1) The UA is prohibited from aerobatic flight, that is, an intentional maneuver involving an abrupt change in the UA's attitude, an abnormal acceleration, or other flight action not necessary for normal flight. (See § 91.303, Aerobatic flight.) If aerobatic flight is anticipated, it must be thoroughly discussed during the system review and be appropriately described in the operating limitations.

(2) Flight operations must not involve carrying hazardous material or the dropping of any objects or external stores.

(3) Each UA must be operated by only one control station at a time. A control station may not be used to operate multiple UAS.

c. Transponder requirements. The UA must operate an approved operational Mode C altitude encoding transponder during all flight operations.

d. Transponder failure. In the event of transponder failure, the UA must conclude all flight operations and expeditiously return to its base of operations within the prescribed limitations of this authorization.

9. Flight Termination and Lost Link Procedures.

a. Flight termination. In accordance with Defense Technologies, Inc., program letter, dated 6/10/2008, flight termination must be initiated at any point that safe operation of the UA cannot be maintained or if hazard to persons or property is imminent.

b. Lost link procedures. In the event of lost link, the UA must provide a means of automatic recovery that ensures airborne operations are predictable and that the UA remains within the flight test area. All flight crew members and the appropriate ATC facility will be immediately notified of the lost link condition and the expected UA response.

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10. Maintenance and Inspection.

a. General requirements. The UAS must not be operated unless it is inspected and maintained in accordance with the Defense Technologies, Inc., Kestrel - T UAS Maintenance and Inspection Policy, DTI-UAS-MAIN-INSP-01 accepted by Washington Flight Standards District Office (FSDO)-27 on 6/10/08, or later FAA-accepted revision. Defense Technologies, Inc., must establish and maintain aircraft maintenance records (see paragraph 10(d) below).

b. Inspections. No person may operate this UAS unless within the preceding 12 calendar months it has had a condition inspection performed according to the FAA-accepted Defense Technologies, Inc., Kestrel - T UAS Maintenance and Inspection Policy, DTI-UAS-MAIN-INSP-01. The UAS must also have been found to be in a condition for safe operation. This inspection will be recorded in the UAS maintenance records as described in paragraph 10(d) below.

c. Authorized inspectors. Only those individuals trained and authorized by Defense Technologies, Inc., and acceptable to the FAA may perform the inspections and maintenance required by these operating limitations.

d. Maintenance and inspection records. Maintenance and inspections of the UAS must be recorded in the UAS maintenance records. The following information must be recorded:

(1) Maintenance record entries must include a description of the work performed, the date of completion for the work, the UAS's total time-in-service, and the name and signature of the person performing the work.

(2) Inspection entries must contain the following, or a similarly worded, statement:
I certify that this UAS was inspected on (date), in accordance with the scope and detail of the Defense Technologies, Inc., Defense Technologies, Inc., Kestrel - T UAS Maintenance and Inspection Policy, DTI-UAS-MAIN-INSP-01, and was found to be in a condition for safe operation.

(3) UAS instruments and equipment required to be installed must be inspected and maintained in accordance with the requirements of the Defense Technologies, Inc., Kestrel - T UAS Maintenance and Inspection Policy, DTI-UAS-MAIN-INSP-01. Any maintenance or inspection of this equipment must be recorded in the UAS maintenance records.

(4) No person may operate this UAS unless the altimeter system and transponder have been tested within the preceding 24 calendar months in accordance with § 91.413, ATC transponder tests and inspections. These inspections will be recorded in the UAS maintenance records.

11. Information Reporting. Defense Technologies, Inc., will provide the following information to Donald.E.Grampp@FAA.GOV on a monthly basis. A copy of the report shall be provided to AIR-200.

- a. Number of flights conducted under this certificate.
- b. Pilot duty time per flight.
- c. Unusual equipment malfunctions (hardware or software).
- d. Deviations from ATC instructions.
- e. Unintended entry into lost link flight mode that results in a course change.

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12. Revisions and Other Provisions.

a. Experimental certificates, program letters, and operating limitations. The experimental certificate, FAA-accepted Defense Technologies, Inc., program letter, and operating limitations cannot be reissued, renewed, or revised without application being made to the New Cumberland Manufacturing Inspection District Office, in coordination with AIR-200. AIR-200 will be responsible for FAA Headquarters internal coordination with the Aircraft Certification Service, Flight Standards Service, Air Traffic Organization, Office of the Chief Council, and Office of Rulemaking.

b. Certificates of waiver or authorization. No Certificate of Waiver or Authorization (COA) may be issued in association with this experimental certificate unless coordinated with AIR-200.

c. Amendments and cancellations. The provisions and limitations annotated in this operational approval may be amended or cancelled at any time as deemed necessary by the FAA.

d. Reviews of revisions. All revisions to Defense Technologies, Inc., FAA-accepted Defense Technologies, Inc., Kestrel - T UAS Maintenance and Inspection Policy, DTI-UAS-MAIN-INSP-01 must be reviewed and accepted by the Washington FSDO-27. The Washington FSDO can be reached at telephone number (703) 230-7664.

13. UAS Modifications.

a. Software and system changes. All software and system changes will be documented as part of the normal maintenance procedures and will be available for inspection. All software and system changes must be inspected and approved per Defense Technologies, Inc., Defense Technologies, Inc., Kestrel - T UAS Maintenance and Inspection Policy, DTI-UAS-MAIN-INSP-01. All software changes to the aircraft and control station are categorized as major changes, and must be provided in summary form at the time they are incorporated.

b. Major modifications. All major modifications, whether performed under the experimental certificate, COA, or other authorizations, that could potentially affect the safe operation of the system, must be documented and provided to the FAA before operating the aircraft under this certificate. Major modifications incorporated under COA or other

authorization need to be provided only if the aircraft is flown under these authorizations during the effective period of the experimental certificate.

c. Submission of modifications. All information requested must be provided to AIR-200.

End of Limitations

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JAN 09 2009

6/10/2008



Henry K. Cooper
Senior Aviation Safety Inspector
New Cumberland Manufacturing Inspection District Office
Bldg. 201, Rm. 102,
400 Airport Road
New Cumberland, PA 17070-3419

JUNE 10, 2008

Issuance Date:

I certify that I have read and understand the operating limitations and conditions that are a part of the special airworthiness certificate, FAA Form 8130-7, issued on 6/10/2008, for the purposes of research and development, market survey, and/or crew training. This special airworthiness certificate is issued for Kestrel – T, serial number 003, registration number N2554V.



Applicant (signature)

6-10-2008

Date:

Name (Printed): Donald Jackson

Title: Senior Vice President

Company: Defense Technologies, Inc.

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FAA FORM 8130-6, APPLICATION FOR U.S. AIRWORTHINESS CERTIFICATE

Form Approved O.M.B. No. 2120-0018
09/30/2007


 U.S. Department of Transportation Federal Aviation Administration		APPLICATION FOR U.S. AIRWORTHINESS CERTIFICATE				INSTRUCTIONS - Print or type. Do not write in shaded areas; these are for FAA use only. Submit original only to an authorized FAA Representative. If additional space is required, use attachment. For special flight permits complete Sections II, VI and VII as applicable.																																																																																																																																													
		1. REGISTRATION MARK N2554V		2. AIRCRAFT BUILDER'S NAME (Make) Defense Technologies, Inc.		3. AIRCRAFT MODEL DESIGNATION Kestrel-T		4. YR. MFR. 2006		FAA CODING																																																																																																																																									
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												AIRCRAFT SPECIFICATION OR TYPE CERTIFICATE DATA SHEET (Give No. and Revision No.) N/A						AIRCRAFT LISTING (Give page number(s)) N/A																																																																																																																																	
III. OWNER'S CERTIFICATION												C. AIRCRAFT OPERATION AND MAINTENANCE RECORDS						D. CERTIFICATION - I hereby certify that I am the registered owner (or his agent) of the aircraft described above, that the aircraft is registered with the Federal Aviation Administration in accordance with Title 49 of the United States Code 44101 et seq. and applicable Federal Aviation Regulations, and that the aircraft has been inspected and is airworthy and eligible for the airworthiness certificate requested.																																																																																																																																	
												CHECK IF RECORDS IN COMPLIANCE WITH 14 CFR Section 91.417 <input checked="" type="checkbox"/>						TOTAL AIRFRAME HOURS 10.0						EXPERIMENTAL ONLY (Enter hours flown since last certificate issued or renewed) 0																																																																																																																											
												DATE OF APPLICATION 6/10/08						NAME AND TITLE (Print or type) Robert J. Mull Jr. Flight Team						SIGNATURE <i>Robert J. Mull Jr.</i>																																																																																																																											
												IV. INSPECTION AGENCY VERIFICATION												A. THE AIRCRAFT DESCRIBED ABOVE HAS BEEN INSPECTED AND FOUND AIRWORTHY BY: (Complete the section only if 14 CFR part 21.183(d) applies.																																																																																																																											
2. 14 CFR part 121 CERTIFICATE HOLDER (Give Certificate No.)				3. CERTIFICATED MECHANIC (Give Certificate No.)				6. CERTIFICATED REPAIR STATION (Give Certificate No.)																																																																																																																																											
5. AIRCRAFT MANUFACTURER (Give name or firm)																																																																																																																																																			
DATE				TITLE				SIGNATURE																																																																																																																																											
V. FAA REPRESENTATIVE CERTIFICATION												(Check ALL applicable block items A and B)																																																																																																																																							
												A. I find that the aircraft described in Section I or VII meets requirements for																																																																																																																																							
												B. Inspection for a special permit under Section VII was conducted by:																																																																																																																																							
												DATE 6/10/08				DISTRICT OFFICE ANE MIDO-44				DESIGNEE'S SIGNATURE AND NO. <i>Henry R. Cooper</i>				FAA INSPECTOR'S SIGNATURE <i>Henry R. Cooper</i>																																																																																																																											

VI. PRODUCTION FLIGHT TESTING	A. MANUFACTURER					
	NAME			ADDRESS		
	B. PRODUCTION BASIS <i>(Check applicable item)</i>					
			PRODUCTION CERTIFICATE <i>(Give production certificate number)</i> _____ →			
			TYPE CERTIFICATE ONLY			
			APPROVED PRODUCTION INSPECTION SYSTEM			
C. GIVE QUANTITY OF CERTIFICATES REQUIRED FOR OPERATING NEEDS						
DATE OF APPLICATION		NAME AND TITLE <i>(Print or Type)</i>		SIGNATURE		
VII. SPECIAL FLIGHT PERMIT PURPOSES OTHER THAN PRODUCTION FLIGHT TEST	A. DESCRIPTION OF AIRCRAFT					
	REGISTERED OWNER			ADDRESS		
	BUILDER <i>(Make)</i>			MODEL		
	SERIAL NUMBER			REGISTRATION MARK		
	B. DESCRIPTION OF FLIGHT CUSTOMER DEMONSTRATION FLIGHTS <input type="checkbox"/> <i>(Check if applicable)</i>					
	FROM			TO		
	VIA			DEPARTURE DATE	DURATION	
	C. CREW REQUIRED TO OPERATE THE AIRCRAFT AND ITS EQUIPMENT					
		PILOT		CO-PILOT		
				FLIGHT ENGINEER		
				OTHER <i>(Specify)</i>		
	D. THE AIRCRAFT DOES NOT MEET THE APPLICABLE AIRWORTHINESS REQUIREMENTS AS FOLLOWS:					
E. THE FOLLOWING RESTRICTIONS ARE CONSIDERED NECESSARY FOR SAFE OPERATION: <i>(Use attachment if necessary)</i>						
F. CERTIFICATION – I hereby certify that I am the registered owner (or his agent) of the aircraft described above; that the aircraft is registered with the Federal Aviation Administration in accordance with Title 49 of the United States Code 44101 <u>et seq.</u> and applicable Federal Aviation Regulations; and that the aircraft has been inspected and is safe for the flight described.						
DATE		NAME AND TITLE <i>(Print or Type)</i>		SIGNATURE		
VIII. AIRWORTHINESS DOCUMENTATION (FAADESIGNEE use only)	<input checked="" type="checkbox"/>	A. Operating Limitations and Markings in Compliance with 14 CFR Section 91.9, as applicable.			G. Statement of Conformity, FAA Form 8130-9 <i>(Attach when required)</i>	
	<input checked="" type="checkbox"/>	B. Current Operating Limitations Attached			H. Foreign Airworthiness Certification for Import Aircraft <i>(Attach when required)</i>	
	<input checked="" type="checkbox"/>	C. Data, Drawings, Photographs, etc. <i>(Attach when required)</i>			I. Previous Airworthiness Certificate Issued in Accordance with 14 CFR Section _____ CAR _____ <i>(Original Attached)</i>	
	<input checked="" type="checkbox"/>	D. Current Weight and Balance information Available in Aircraft				
		E. Major Repair and Alteration, FAA Form 337 <i>(Attach when required)</i>			J. Current Airworthiness Certificate Issued in Accordance with 14 CFR Section <u>21.191 (a) (c) and (f)</u> <i>(Copy Attached)</i>	
	<input checked="" type="checkbox"/>	F. This inspection Recorded in Aircraft Records				
			<input checked="" type="checkbox"/>	K. Light-Sport Aircraft Statement of Compliance, FAA Form 8130-15 <i>(Attach when required)</i>		

UNITED STATES OF AMERICA
DEPARTMENT OF TRANSPORTATION - FEDERAL AVIATION ADMINISTRATION

SPECIAL AIRWORTHINESS CERTIFICATE

COPY

A	CATEGORY/DESIGNATION EXPERIMENTAL (UNMANNED AIRCRAFT)	
	PURPOSE Research & Development/Mkt. Survey/Crew Training	
B	MANUFACTURER	NAME N/A
		ADDRESS N/A
C	FLIGHT	FROM N/A
		TO N/A
D	N-2554V	SERIAL NO. 003
	BUILDER Defense Technologies, Inc.	MODEL Kestral - T
E	DATE OF ISSUANCE June 10, 2008	EXPIRY June 9, 2009
	OPERATING LIMITATIONS DATED 06/10/2008 ARE PART OF THIS CERTIFICATE	
	SIGNATURE OF FAA REPRESENTATIVE  Henry K. Cooper	DESIGNATION OR OFFICE NO. ANE-MIDO-44

Any alteration, reproduction or misuse of this certificate may be punishable by a fine not exceeding \$1,000 or imprisonment not exceeding 3 years, or both. THIS CERTIFICATE MUST BE DISPLAYED IN THE AIRCRAFT IN ACCORDANCE WITH APPLICABLE TITLE 14, CODE OF FEDERAL REGULATIONS (CFR).

A	This airworthiness certificate is issued under the authority of Public Law 104-6, 49 United States Code (USC) 44704 and Title 14 Code of Federal Regulations (CFR).
B	The airworthiness certificate authorizes the manufacturer named on the reverse side to conduct production flight tests, and only production flight tests, of aircraft registered in his name. No person may conduct production flight tests under this certificate: (1) Carrying persons or property for compensation or hire: and/or (2) Carrying persons not essential to the purpose of the flight.
C	This airworthiness certificate authorizes the flight specified on the reverse side for the purpose shown in Block A.
D	This airworthiness certificate certifies that as of the date of issuance, the aircraft to which issued has been inspected and found to meet the requirements of the applicable CFR. The aircraft does not meet the requirements of the applicable comprehensive and detailed airworthiness code as provided by Annex 8 to the Convention On International Civil Aviation. No person may operate the aircraft described on the reverse side: (1) except in accordance with the applicable CFR and in accordance with conditions and limitations which may be prescribed by the Administrator as part of this certificate; (2) over any foreign country without the special permission of that country.
E	Unless sooner surrendered, suspended, or revoked, this airworthiness certificate is effective for the duration and under the conditions prescribed in 14 CFR, Part 21, Section 21.181 or 21.217.

UAV Program Letter
Experimental Certification Request
Defense Technologies Inc.
Date: 06-10-08

Kestrel-T
N2554V

V 1.8

Sirs,

The contents of this UAV Program Letter for Experimental Certification Request by Defense Technologies Inc. are in reference to and associated with a specific airframe, weighing less than 55 pounds. The airframe referred to as Kestrel-T, a highly modified and enhanced model aircraft. This aircraft has been configured for crew training, market surveys and research development purposes.

The airframe uses the Piccolo autopilot system, a COTS product from Cloud Cap Technology, Inc.

The airframe design has been flown successfully for many hours in the original configuration. The autopilot manufacturer has indicated that it (autopilot) has been flown successfully for more than 8000 flight hours.

In addition to the information requested in the Program Letter Sample Form, DTI can supply extensive documentation of the design and testing accomplished on the Kestrel-T Aircraft.

Table 1 – Kestrel-T Information

<u>REGISTERED OWNER NAME:</u> DEFENSE TECHNOLOGIES INC.	<u>AIRCRAFT BUILDER:</u> DEFENSE TECHNOLOGIES, INC.
<u>REGISTERED OWNER ADDRESS:</u> 21795 SHANGRI-LA DR LEXINGTON PARK MARYLAND 20653	<u>YEAR MANUFACTURED:</u> 2006
<u>AIRCRAFT DESCRIPTION:</u> KESTREL-T: GIANT SCALE RC SIZE STANDARD WING AND TAIL CONFIGURATION TRICYCLE GEAR CONFIGURATION TOTAL LENGTH 78.75 INCHES WING SPAN 105.125 INCHES 2 CYCLE INTERNAL COMBUSTION ENGINE PICCOLO AUTOPILOT	<u>AIRCRAFT SERIAL NUMBER:</u> DTI SERIAL #: 003
	<u>AIRCRAFT MODEL DESIGNATION:</u> KESTREL – T
	<u>ENGINE MODEL:</u> RCS 180
<u>AIRCRAFT REGISTRATION:</u> N2554V	<u>PROPELLER MODEL:</u> Bambula 20 x 8 wood

1. DEFINE THE EXPERIMENTAL PURPOSE(S) UNDER WHICH THE AIRCRAFT IS TO BE OPERATED (14 CFR § 21.191).

The Kestrel-T N2554V aircraft will be operated for the following purposes per 14 CFR § 21.191:

- Research and Development – To test new aircraft equipment, new aircraft installations, new aircraft operating techniques or new aircraft uses.
- Crew Training – To train Defense Technologies UAS flight crew members.
- Market Surveys – To conduct market surveys, sales demonstrations and customer crew training, per Sec. 21.195.

2. DESCRIBE THE PURPOSE/SCOPE OF THE EXPERIMENTAL PROGRAM FOR EACH 14 CFR § 21.191 EXPERIMENTAL PURPOSE SOUGHT (14 CFR §§ 21.193(b)(d)).

N2554V is identified in Para. 4. of this UAV Program Letter for Experimental Certification Request by Defense Technologies Inc.

Purposes:

- Research and Development - DTI is developing UAS related hardware items for the purpose of advancing the state of UAS operations in the areas of safety, economy, ecology, human factors and UA situational awareness. Potential products such as payload systems and data links and UAS related software will require in-flight test for validation and marketing in order for Defense Technologies to maintain a healthy growth economically.

DTI is also developing composite UA airframe components that will require testing and validation of the design concepts and the development of new operating techniques, as well as new and / or revised aircraft equipment and new airframe installations.

- Crew Training – DTI will be using N2554V for the training on DTI's own UAS flight team. Training includes the training of new members, cross-training of existing members, currency training and checkouts and flight reviews.
- Market Surveys – DTI will be using N2554V for market surveys and sales demonstrations of UAS products. Additionally, DTI may use N2554V to train customer flight crews.

Accompanying this UAV Program Letter for Experimental Certification Request is the proposed test plans for Defense Technologies for the coming calendar year.

aircraft for the purpose of advancing the state of UAS operations in the areas of safety, economy, ecology, human factors and UA situational awareness

3. DEFINE THE AREA(S) IN WHICH THE EXPERIMENTAL FLIGHTS WILL BE CONDUCTED.

a. Describe the areas over which the flights are to be conducted and address of base operation (14 CFR § 21.193(d)(3)).

4MD4 Clements Field is a private airport located at:

Latitude 38° 20.408N

Longitude 76° 44.432W

4MD4 is 33.5 nm SSE of DCA on a 156 degree true or 166 degree magnetic bearing, located in a rural farming community about 1nm from a two-lane road.

4MD4 is also 16 nm from the PXT VORTAC on the 290 degree radial.

Elevation: 105 feet.

Runway: 1700 feet, sod.

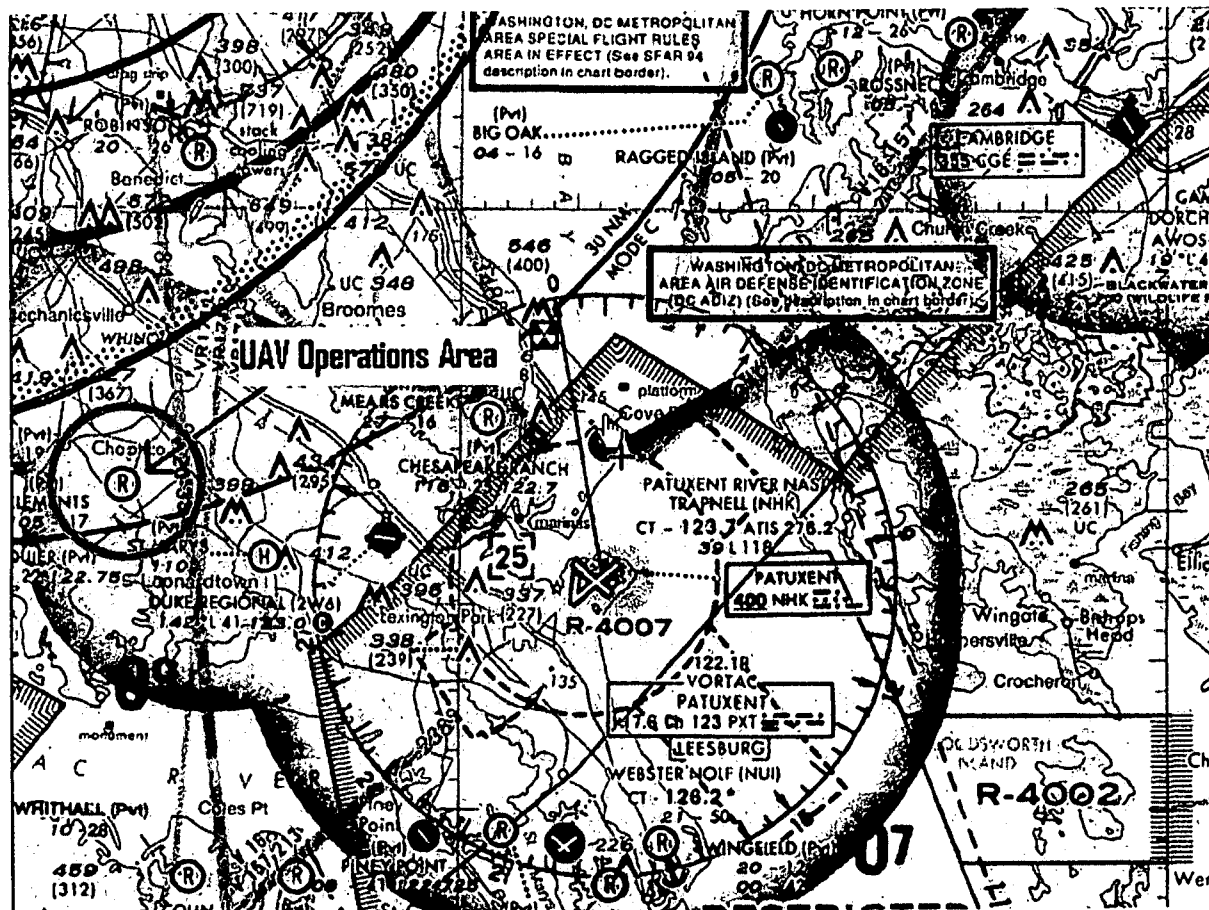


Figure 1. Sectional Chart View of 4MD4 Clements Field

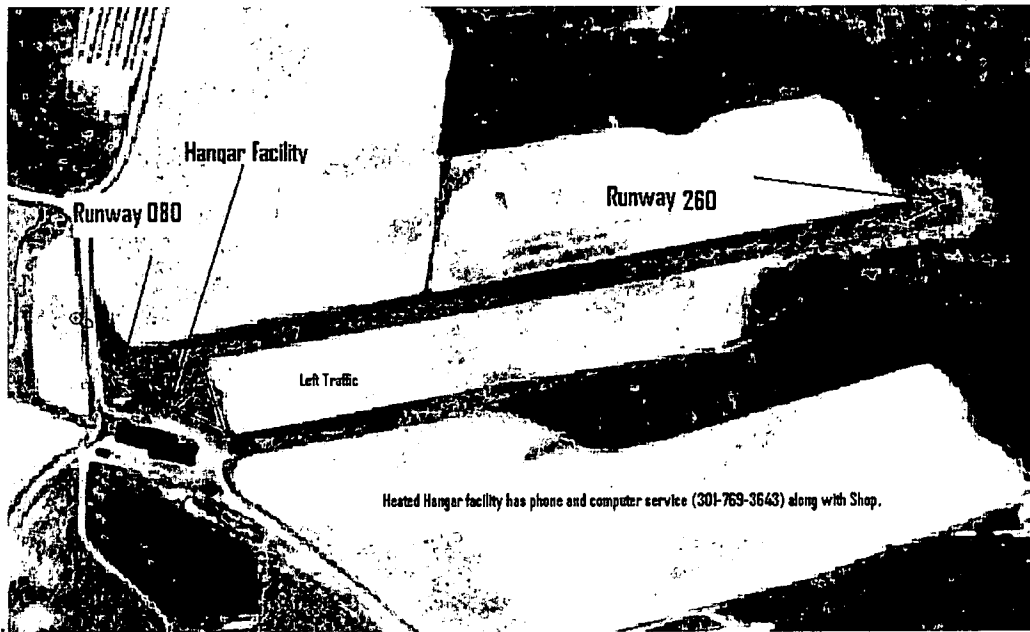


Figure 2. Clements Airfield 4MD4 – Aerial View

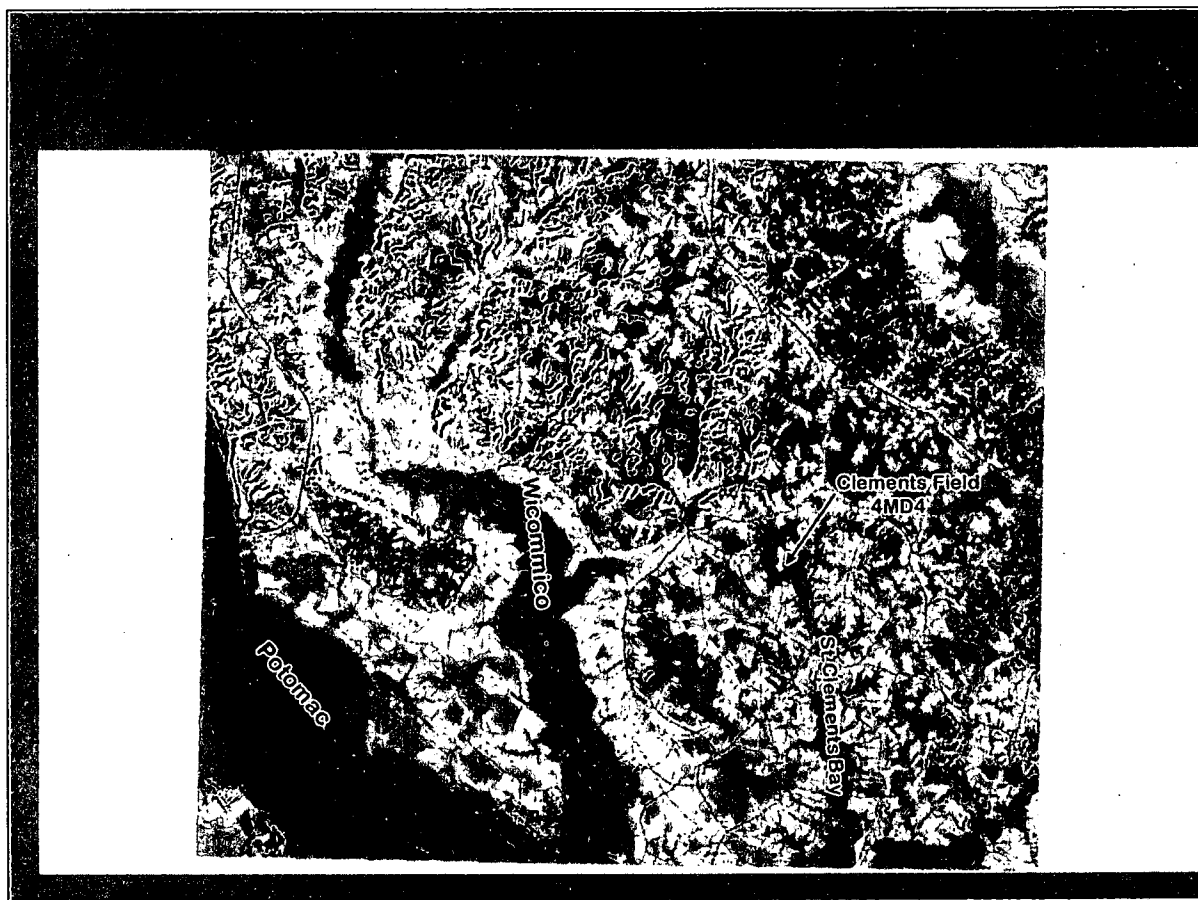


Figure 3. Topographic Information of 4MD4 Clements Field

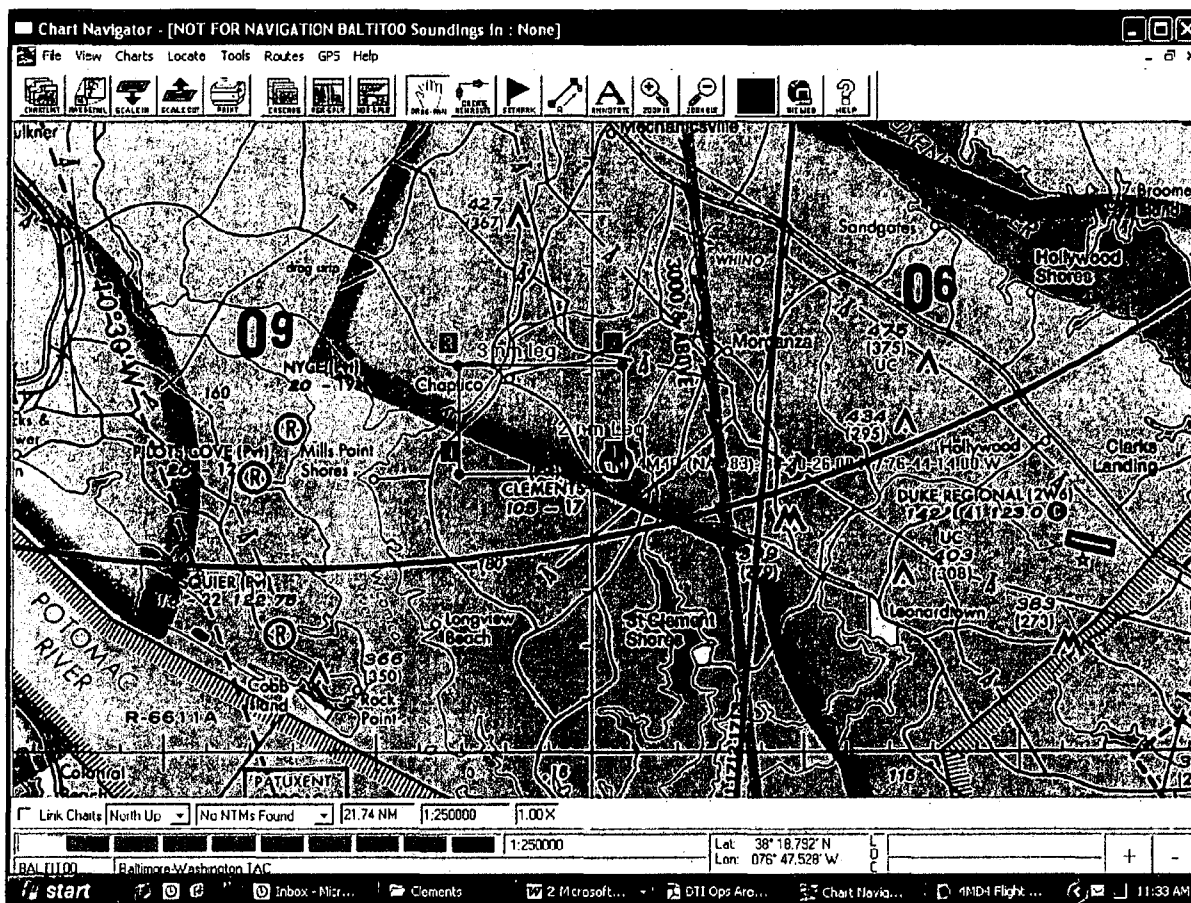


Figure 4. Requested Experimental Flight Box for Kestrel-T with 2nm x 3nm legs.

The requested flight box for Kestrel-T Experimental flight operations features 2 nm North / South legs and 3nm East / West legs with 4MD4 located at the Southeast corner of the flight box. This box is designed to stay completely within Potomac airspace while remaining clear of the ADIZ, as well as increasing the clearance from the closest VR route.

Table 2. Requested Kestrel-T Experimental Flight Box Area

All Operations - 1000 ft MSL Ceiling Limit

Waypoints Kestrel-T Experimental Flight Box - 4MD4 Operations		
Point Name	Latitude	Longitude
Point 1	38° 20.148' N	076° 44.241' W
Point 2	38° 22.138' N	076° 44.263' W
Point 3	38° 22.145' N	076° 48.098' W

Point 4	38° 20.156' N	076° 458.074' W
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- b. Identify all proposed flight areas using latitude and longitude on aeronautical chart.

The proposed flight operations are to remain within the flight box requested in Table 2, and not to exceed 1nm north and 1nm west of the airport and will remain clear of the ADIZ.

Flights will also include circular and racetrack loiters within the flight box.

All altitudes are to stay within approved 1000 MSL ceiling limits.

Flight profiles for N2554V will vary according to the mission. For example, crew training will consist of pattern work to include multiple takeoffs and landings, touch and go operations and autopilot flight within the proposed flight box.

Autopilot flight consists of pre-planned and dynamic waypoint routes and circular and rectangular loiters. For example, when evaluating an EO sensor, it is necessary to vary speed, loiter radius and altitude. While training UAS crews to operate a mission, it will be necessary to fly a planned route and when a target of interest is detected, transition to a loiter over the target.

The requested flight box for Kestrel-T Experimental flight operations features 2nm North / South legs and 3nm East / West legs with 4MD4 located at the Southeast corner of the flight box, with a 1000 MSL ceiling. This box is designed to stay completely within Potomac airspace while remaining clear of the ADIZ, as well as increasing the clearance from the closest VR route.

Defense Technologies proposes that Kestrel-T UAS flights consist of rectangular routes within the boundaries of the operations area and circular loiter patterns anywhere within the operations area. Rectangular routes and loiters may be either clockwise or counter-clockwise in direction.

Defense Technologies has no plans to perform North/South or East/West grid pattern flights at this time.

c. Include information on airspeed, altitude, number of flight hours, number of flights and program duration for each test flight area.

Airspeed: VNE 80 knots.

Airspeed: Normal Cruise 45-55 knots.

Altitude: up to 1000 Feet AGL.

Each test flight will be about 30 to 90 minutes in duration with two (2) to six (6) flights per day. Tests are scheduled in five (5) day blocks with a minimum of three (3) flight days planned. Testing will take place over the entire calendar year.

d. What class of airspace will be used?

Class E and G depending on altitude flown.

e. Will minimum fuel requirements of 14 CFR § 91.151 be met?

Yes.

f. Will flight-testing include payload testing?

Yes.

g. What considerations need to be taken with regard to payloads?

The Kestrel-T aircraft has been evaluated statically and with flight tests to +4G/-2G, equating to a maximum payload of 15 pounds. All flights of this aircraft in the defined configuration will be accomplished with payloads under 15 pounds.

All payloads installed in the Kestrel-T are isolated from the aircraft power supply and feature required EMI shielding.

h. Will the aircraft perform any aerobatic maneuvers?

No. Flight operations are restricted to maneuvers permitted with Normal Category aircraft.

i. Flight Conditions (e.g., VFR, IFR, VMS, etc.)

VFR only.

4. AIRCRAFT CONFIGURATION. Attach three-view drawings or three-view dimensioned photographs of the aircraft (14 CFR § 21.193(b)(4)). Describe Unmanned Aircraft System configuration including ground control station. Include a description of aircraft/system performance characteristics including:

a. Wing span

105.125"

b. Length

78.75 in" (including spinner)

c. Power plant

RCS 180 – 30cc two-cycle w/CDI

d. Max gross take off weight

40 pounds including payload

e. Fuel capacity

100 fluid ounces

f. Payload capacity

Maximum of 10.375 pounds

g. Max altitude

2500 feet

h. Endurance

3 hours 20 minutes maximum

i. Max airspeed

VNE 80 knots

j. Control/data frequencies

1. Piccolo Autopilot 900 MHZ
 - a. Aircraft command link
 - b. Aircraft telemetry data link
2. Payload Data Frequencies
 - a. 1.7 GHz L-Band
 - b. 2.4 GHz S-Band

k. Guidance and navigation control

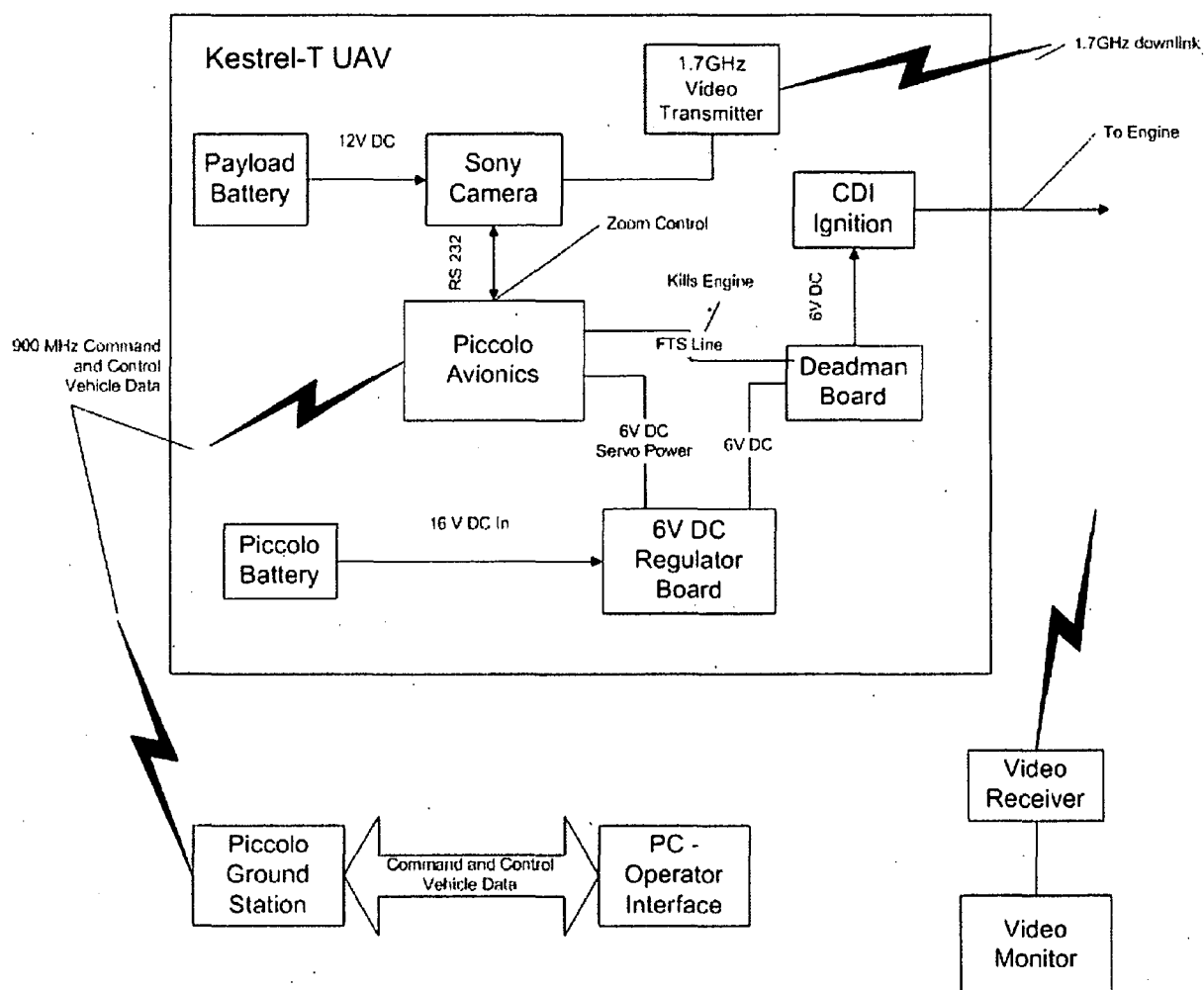
1. Aircraft - Cloud Cap Technology, Inc. Piccolo Autopilot v1.3.1. This is a COTS product.

2. Ground Station - Cloud Cap Technology, Inc. Operator Interface v1.3.1.
This is a COTS product.
3. Open UMI - DTI developed as a "reduced operator workload" UAS control package. This application utilizes the Cloud Cap Technology, Inc. COTS API for communications with a UAS using Cloud Cap Technology hardware, the same hardware used to control a UAS with the Operator Interface v1.3.1.
4. Remote Control Mode – The Cloud Cap Technology, Inc. autopilot system has a software bypass feature as part of the COTS product. There is no requirement for any software or computer to be running in order to fly a UAS in manual RC mode.

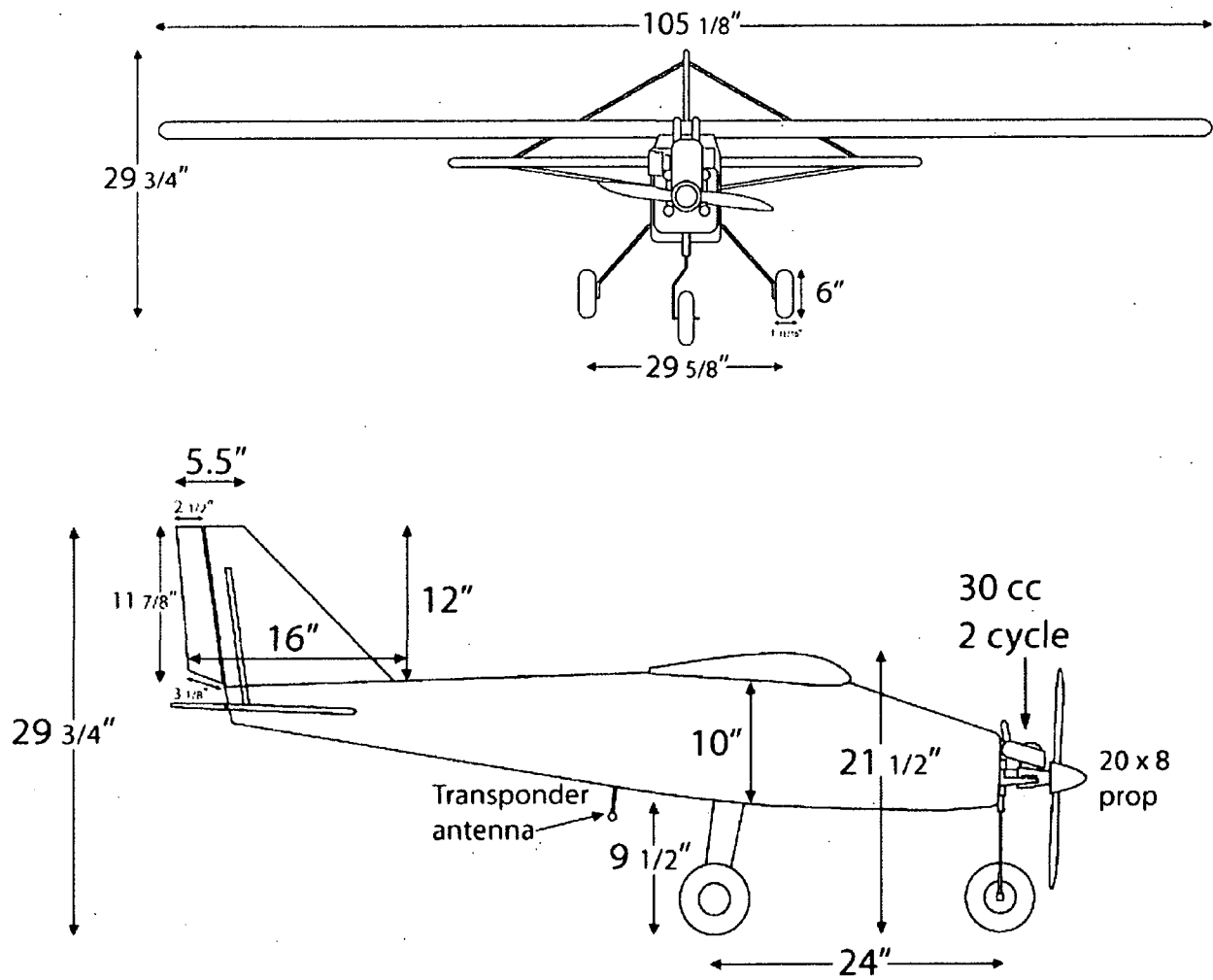
Kestrel-T UAS Specifications

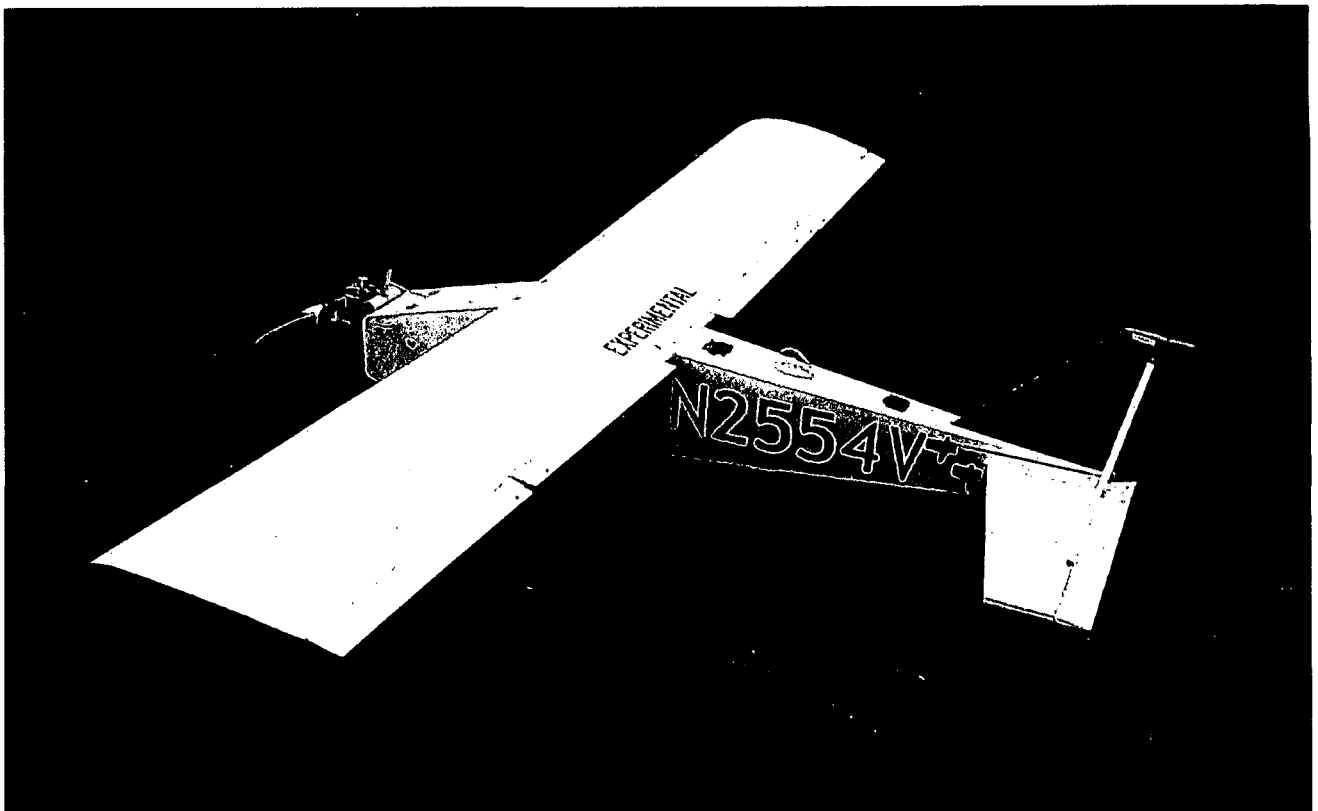
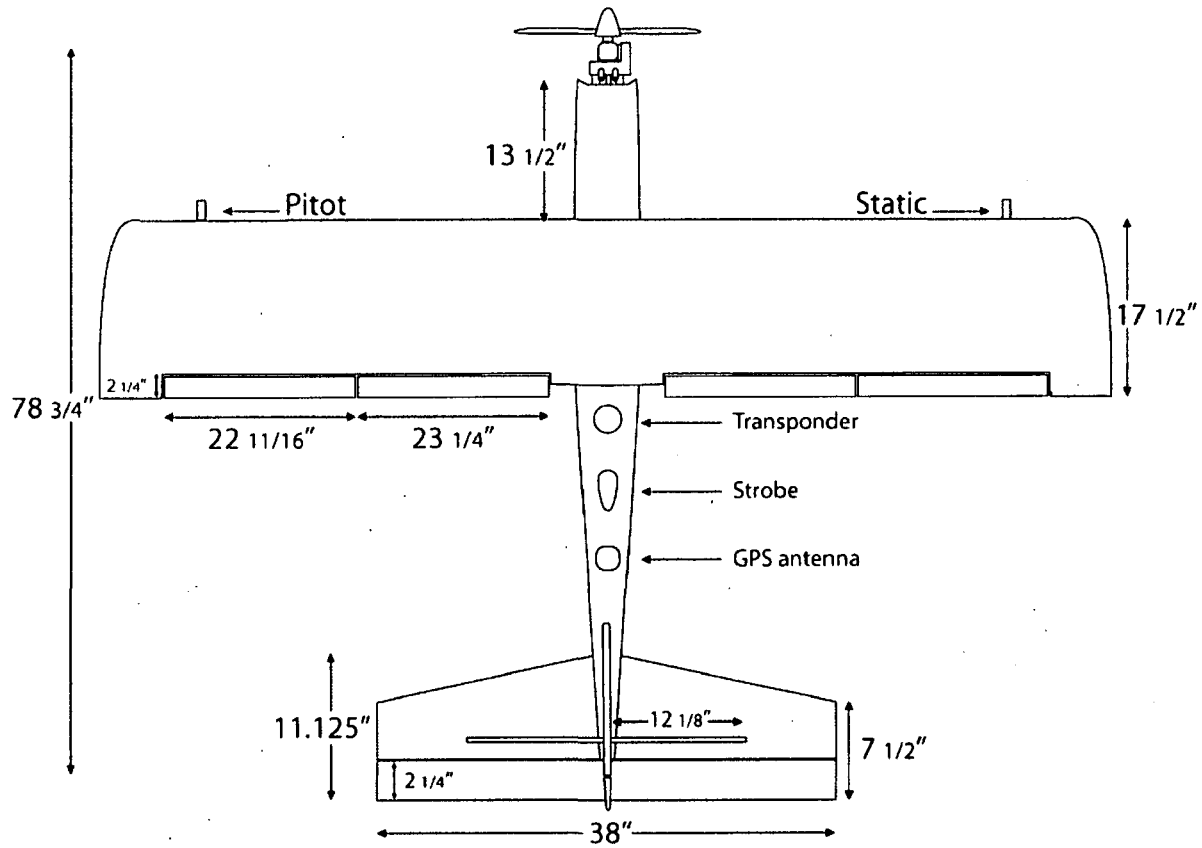
Specifications	
Wingspan	105.125 in
Wing Area	1839 sq in
Wing Chord	17.5 in
Wing Aspect Ratio	6.007
Tail Configuration	Conventional
Horizontal Tail Span	38.0 in
Horizontal Tail Area	361 sq in
Vertical Tail Span	12 in
Vertical Tail Area	129 sq in
Fuselage Length	78.75 in, including spinner
Fuselage Width and Height (Max)	6.6 in wide x 11 in high
Overall Height	33 in, ground to top of vertical stabilizer
Engine Type	RCS 180 - 30cc Two-Cycle IC w/CDI
TBO	250 hours
Propeller Type	Bambula 20 in dia. x 8 in pitch
Landing Gear	Tricycle
Servos	High Torque, Metal Gear, Ball Bearing
Capacities	
Empty Weight	29.625lbs
Gross Weight	40.0 lbs max
Fuel Capacity	100 fluid oz
Payload Capacity	Maximum 10.375 lbs
Performance	
Stall Speed	20 kts
Operational Speed	30 – 60 kt
Normal Cruise	50 – 55 kts

Vne	80 kts
Range, maximum	Approximately 165 nm
Endurance, maximum	3 hours & 20 minutes, no reserve
Altitude Range	Up to 2500 feet
Launch and Recovery	Rise-Off-Ground (ROG), RC via Pilot
Avionics	
Autopilot	Piccolo v2.0.4
Ground Station	Piccolo v2.0.4 Operator Interface
Communications	900 MHz UHF

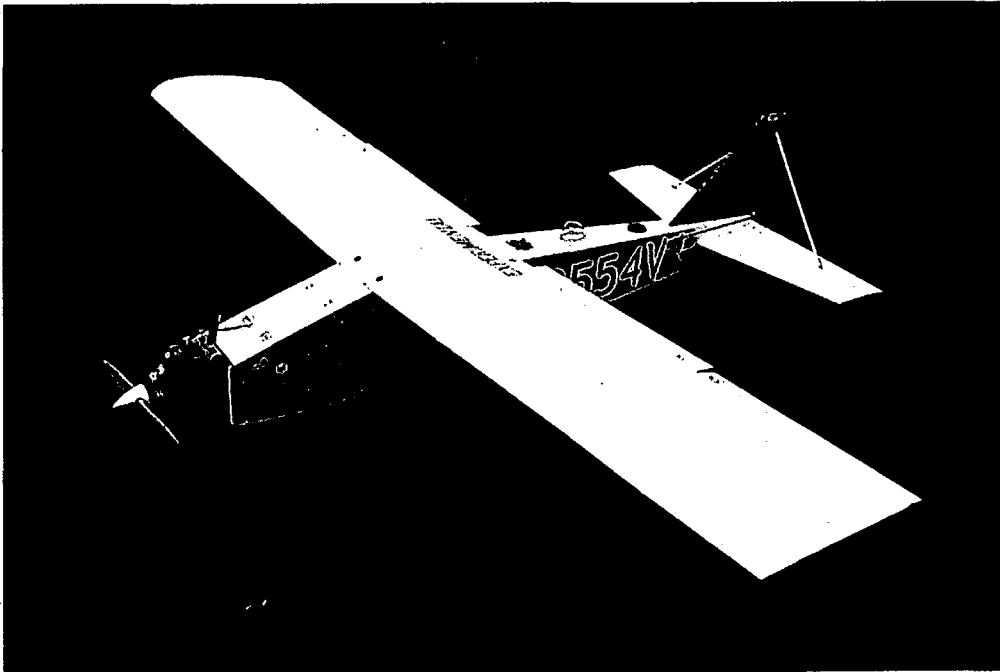


Kestrel-T UAS Communications Block Diagram

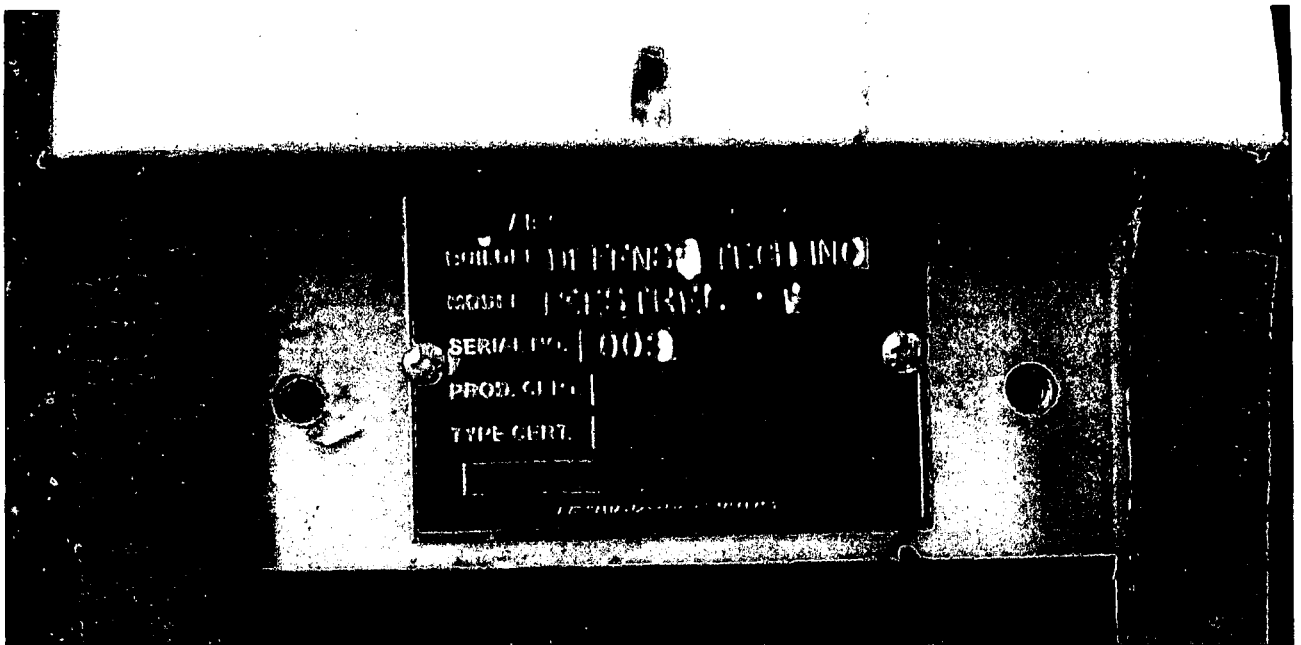




Kestrel-T Color Scheme and N Number Installation



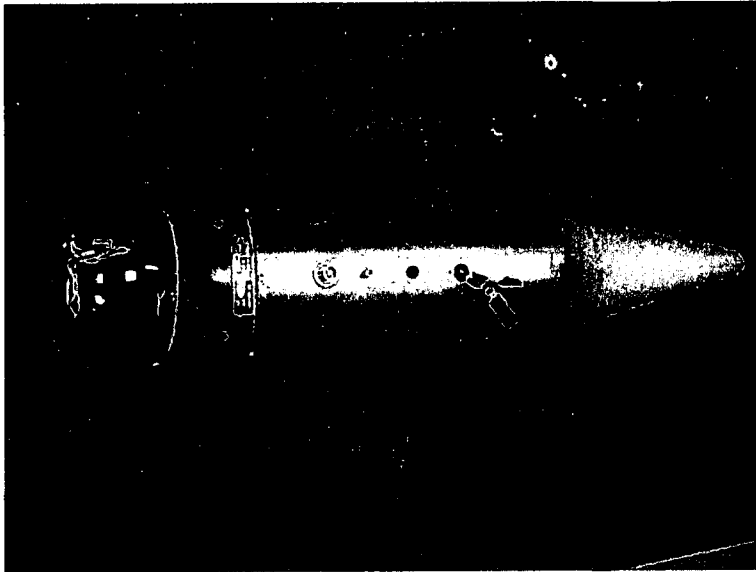
Kestrel-T



Kestrel-T Data Plate

Payload

Pan-Tilt -Zoom Stabilized Camera



5. INSPECTION AND MAINTENANCE (14 CFR Part 91 Subpart E).

a. Describe the inspection and maintenance program that will be used to maintain the aircraft and related systems (includes ground stations and/or other support systems).

DTI has developed a condition inspection checklist developed from FAR part 43, included as an attachment. The aircraft is maintained by the same engineers and mechanics that designed/fabricated it. The aircraft gets a preflight inspection on each fly day, and is thoroughly inspected flights, per Defense Technologies, Inc. checklists.

All changes, repairs, and maintenance are logged in the aircraft log book.

b. Provide copy of flight manual, if applicable, current weight and balance report, equipment list.

Please see the attached binders for the required details.

The flight manual (Pre and Post flight checklists along with sample test plans are contained in these binders in section 8.

6. PILOT QUALIFICATION (14 CFR §§ 61.3, 61.5).

a. Describe the qualifications for each pilot.

All pilots will have received DTI UAS training and have demonstrated RC flight. Additionally, the Pilot in Command will hold a current Biennial Flight Review and third-class medical (second-class after 09/10/08).

External Pilot and Telemetry Operator (Internal Pilot)

Bachelors of Science, University of Maryland – Computer and Information Sciences, minor in Aerospace Engineering

300 hours as FAA certificated Private Pilot Fixed Wing

30 Years of experience as RC flier and construction

2 years experience as UAV pilot, builder and integrator

100 hours documented as RC Pilot, many more undocumented

External Pilot

Bachelors: Professional Aeronautics ERAU

FAA Certificated, Commercial, Instrument, Multi-Engine, CFI, Ground Instructor, and 1800 hours as Pilot of Single Engine/Multi Engine aircraft. Fixed Wing

Certificate of completion from Advanced Ceramics Research for UAV Pilot Qualification Training for Silver Fox and Manta UAV systems

20 years experience as AP and 10 years experience as IA

External Pilot

63.5 Hours as FAA Certificated Private Pilot Fixed Wing

500 Hours as UAV External Pilot and Payload Operator Fixed Wing

2500 RC Flight time Fixed Wing

External Pilot

1000 Hours as RC pilot Fixed Wing

10 years maintenance experience on Avionics C-130 and P-3 Military

External Pilot

2003 hours as private pilot Fixed Wing

185.9 hours of UAV operation in support of U.S. Military operations Fixed Wing

Basic Flight Instructor for Ultra light

Working on LSA CFI currently

22 years involvement in RC construction and flight

Currently building Ultra light aircraft for FAA inspection/Certification

External Pilot and Telemetry (Internal Pilot)

300_Hours as RC Pilot Fixed Wing

b. Pilots must be qualified/certificated in the appropriate type of aircraft, i.e., rotorcraft, powered lift, fixed wing, etc.

Understood.

c. Describe internal training program to qualify pilots.

Pilots are trained and qualified by DTI. DTI is currently developing a formal training and qualification program for pilots and will forward when completed.

Additionally three of our pilots received completion certifications from Advanced Ceramics Research, in Tucson in 2004 for flight of the Silver Fox and Manta vehicles. This is the equivalent of a Manufacturers School.

d. Describe the qualifications and training of observers.

Observers are trained and qualified by DTI. DTI is currently developing a formal training and qualification program for observers and will forward when completed.

7. AIRCRAFT MARKING (14 CFR Part 45). All Unmanned Aircraft System (UAS) are required to be registered and identified with the registration number. Aircraft must be marked in accordance with part 45.

Understood.

8. ATC TRANSPONDER AND ALTITUDE REPORTING SYSTEM EQUIPMENT AND USE (14 CFR § 91.215). Describe the aircraft altitude reporting system.

The Kestrel-T is currently configured with a 4096 code mode C capable transponder.

9. METHOD FOR SEE AND AVOID (14 CFR § 91.113a). In what manner, or by what means, will the requirement to "see and avoid" other aircraft be met? What performance will the chase plane have?

DTI flight test plans for the coming year do not require operations beyond line of sight of the pilot.

Prior to flight operations, ATC will be notified. ATC notification procedure is pending; to be provided by FAA during the current certification process. Our current method of "Detect, See and Avoid" is to use qualified pilot(s) and observers on the ground to maintain separation all traffic.

DTI has developed communications protocols for use during flight operations. Current operations provide the right-of-way to any and all air traffic and protocols have been developed to ensure the safety of all other aircraft.

DTI is does not plan on using a chase plane for their planned series of tests.

Should future testing require a chase plane, DTI notify the FAA for modification to the current experimental certification.

10. SAFETY RISK MANAGEMENT. An applicant must provide a safety checklist that identifies and analyzes the hazards of UAS operations that are described in the program letter. Additional information is available by contacting the FAA Aviation Safety Inspector.

- All operations conducted from Remote Fields
- Vehicle remains in Line of sight of Pilot (s) and Observer (s)
- No bystanders allowed when test operations are in progress
- Test Sponsors and Test Observers are briefed on the operations and remain clear of launch and recovery areas
- UAV yields to any observed traffic (pilot goes immediately to manual mode and descends away from traffic)
- Local VHF Frequency is monitored to have situational awareness for approaching traffic
- VFR only operations
- Dead man circuit allows the engine to be switched off in emergencies.
- Large sections of the UAV are painted International Orange for observation from both ground observers and other air traffic.
- In both locations requested DTI controls all flights departing the locations and services UNICOM requests for inbound traffic. (Private Fields)
- No structures are intentionally over-flown
- A team Briefing occurs before each launch of an aircraft (UAV) on the purpose of the launch, objectives, and emergency procedures.
- Fire extinguishers are available on premises
- Medical emergency kits available on premises
- The DTI mission Controller determines if a Fire or Medical emergency warrants a 911 call
- At least one person at the test location is briefed in Emergency Medical Response Techniques

11. SYSTEM CONFIGURATION. Provide a description of aircraft system configuration and all on-board and ground-based equipment.

The DTI Kestrel-T Unmanned Air System consist of a small fixed wing aircraft integrated with a Cloud Cap Technology Inc. Piccolo Autopilot and a RCS 180 Engine. A Cloud Cap Technology Inc. Ground Control Station including a second backup control station, Mobile laboratory facility, handheld communication radios

used by the crew, 11500 KW external generator for ground station operation and miscellaneous antennas and cables complete the UAS.

The Piccolo autopilot operates in the 900 MHZ range and is a frequency hopping radio.

The Kestrel-T can support a payload of approximately 10 pounds. The lifting flight surface configuration is standard high wing (similar to Cessna 150). The aircraft features conventional landing gear with a steer able nose wheel and main gear legs of carbon fiber construction.

Electrical power to the aircraft autopilot and flight systems is supplied by a 16 volt Li-Poly battery with a capacity of 2000 milliamp-hours.

ATC transponder, encoder and lighting is powered by a separate Li-Poly battery from a separate circuit, also of 2000 milliamp-hours capacity.

12. SYSTEM SAFETY - FLIGHT TERMINATION AND LOST LINK. What is the expectation of aircraft "Flight" if fuel is starved? Briefly describe/explain aircraft lost link and emergency recovery procedures. Provide a brief explanation of the flight termination system (FTS).

Loss of Engine:

All currently planned operations are within the observable range of the pilot and glide distance to the runway. In the event of a loss of engine, the pilot will observe the aircraft slow down as the autopilot attempts to maintain altitude. Engine exhaust noise can be heard from anywhere within the proposed flight box and the absence of such is also noted by the pilot. Additionally, the telemetry operator will be alerted to a loss of rpm and will call the pilot to confirm via the flight team radios.

Loss of engine does not cause a loss of flight however. The pilot simply takes control of the aircraft and flies the aircraft to a landing within the flight box.

Lost Link:

DTI's documented procedures are to program the autopilot to fly to a "lost comms" waypoint and loiter, fly a circular flight path centered, on this point.

Upon Loss of Communications (LOC), the vehicle will head towards the LOC waypoint.

The internal pilot will receive an indication of LOC and announce it to the flight team.

External personnel will confirm that the aircraft is headed towards the LOC waypoint.

Upon arrival to the Loss of Communications point the vehicle enters an orbit at the commanded altitude, speed and radius. The vehicle will remain in this orbit until, a) communications are reestablished or b) the vehicle exhausts its fuel reserve.

Loss of Servo Voltage:

Servo voltage is monitored in real-time by telemetry. In the event of loss of servo voltage, the engine may be stopped via a signal from telemetry. Current DTI

procedures dictate that telemetry notifies the pilot of the loss of servo power and awaits pilot command to initiate. The pilot determines the best time to stop the engine and instructs telemetry to issue the command.

13. COMMAND AND CONTROL. Provide a brief description of the system and/or procedures for command and control of the UAS.

The Kestrel-T UAS uses a Cloud Cap Technology, Inc. COTS autopilot system. DTI has developed detailed checklist to cover all aspects of flight proposed for the UAS.

In brief:

- A DTI developed preflight checklist covers configuring the Cloud Cap Technology, Inc. autopilot and ground station.
- The Kestrel-T UAS requires an External pilot for launch and recovery.
- Once airborne the aircraft may be switched to autopilot and commanded to fly a route or loiter configured in the Piccolo ground station.
- At any time the pilot may override any test step to insure the safety of air traffic or ground personnel following DTI developed protocols.
- At any time any persons on the flight team can order halting of operations for safety reasons. In this event, the pilot takes appropriate measures following DTI developed protocols.

14. CONTROL STATIONS. Provide a brief description of the ground/airborne stations used to control the UAS.

The ground station used to control the Kestrel-T UAS is a COTS product from Cloud Cap Technology, Inc., consisting of:

- Desktop Ground Station with:
 - UHF Transceiver
 - Communications Port to PC
 - Main External Power Input
 - Internal Backup Battery
 - UHF antenna
 - Communications Port to Pilot Controls
- PC with:
 - Operator Interface Software
- Pilot Controls
 - Connected to Desktop Ground Station

Piccolo's ground station is based upon the same hardware that makes up the avionics package. It manages the communication link to one or more avionics

systems, interfaces to the pilot in the loop console, and provides a command and control stream to the operator interface PC.

A second ground station software suite will be tested by DTI using the Kestrel-T UAS called Open UMI. Open UMI is a DTI developed application designed as a "reduced operator workload" UAS control package. This application utilizes the Cloud Cap Technology, Inc. COTS API for communications with a UAS using Cloud Cap Technology hardware, the same hardware used to control a UAS with the Operator Interface v1.3.1.

15. CONTROL FREQUENCIES. Provide a description/listing of the frequencies used to control the UAS.

This Control System uses the Cloud Cap Autopilot and Ground Control Station operating 902 to 928 MHZ. for command and control of the vehicle.

Payload video is transmitted on 1.7GHz and 2.4 GHz.

Revision: 1.0

Date: 06/10/08

ID	
Serial Number	

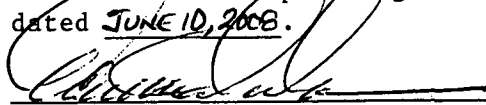
I certify that this aircraft has been inspected on 6/10/08 in accordance with the scope and detail of DTI Kestrel-T UAS Maintenance and Inspection Policy, Doc No. DTI-UAS-MAIN-INSP-01, Rev 2.2, per the Daily Aircraft Condition Inspection Checklist, and the Daily Ground Station Condition Inspection Checklist, and was found to be in a condition for safe operation.

Name	<i>Robert J. Mudd Jr.</i>
Signature	<i>Robert J. Mudd Jr.</i>

I have determined that this aircraft has been inspected for condition, and has been found to be in a condition for safe operation for the certificate requested:

1. Research & Development
2. Crew Training
3. Market Survey

Issued FAA Form 8130-7 Special Airworthiness Certificate and Operating Limitations dated JUNE 10, 2008.



Henry K. Cooper, Sr. Av. Safety Inspector
ANE-MIDO-44



New Cumberland Manufacturing Inspection District Office
 Bldg. 201, Rm. 102,
 400 Airport Road
 New Cumberland, PA 17070-3419

Operating Limitations
Experimental: Research and Development, Market Survey,
and/or Crew Training

Registered Owner Name: Defense Technologies, Inc. Registered Owner Address: 21795 Shangri-La Dr Lexington Park Maryland 20653 Aircraft Description: Kestrel-T: Giant Scale Rc Size Standard Wing And Tail Configuration Tricycle Gear Configuration Aircraft Registration: N2554V	Aircraft Builder: Defense Technologies, Inc. Year Manufactured: 2006 Aircraft Serial Number: 003 Aircraft Model Designation: Kestrel – T Engine: RCS 180 Propeller: Bambula 20 x 8 wood
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The following conditions and limitations apply to all unmanned aircraft system (UAS) flight operations for the Kestrel – T, while operating in the National Airspace System (NAS).

1. General Information.

a. Integrated system. For the purposes of this special airworthiness certificate and operating limitations, the Kestrel – T, operated by Defense Technologies, Inc., is considered to be an integrated system. The system is composed of the following:

- (1) Kestrel – T, serial number 003,
- (2) UAS control station(s), that is, fixed, mobile, ground-based.
- (3) Telemetry, launch, and recovery equipment.

(4) Communications and navigation equipment, including ground and/or airborne equipment used for command and control of the Kestrel – T.

(5) Ground or airborne equipment used for communication with other members of the flight crew, observers, air traffic control (ATC), and other users of the NAS.

b. Compliance with 14 CFR part 61 (Certification: Pilots, Flight Instructors, and Ground Instructors) and part 91 (General Operating and Flight Rules). Unless otherwise specified in this document, the UA pilot-in-command (PIC) and Defense Technologies, Inc., must comply with all applicable sections and parts of 14 CFR including, but not limited to, parts 61 and 91.

c. Operational requirements.

(1) No person may operate this UAS for other than the purpose of research and development, market survey, and/or crew training, to accomplish the flight operation outlined in Defense Technologies, Inc., program letter dated 6/10/2008, which describes compliance with § 21.193(d), Experimental certificates: General, and has been made available to the UA PIC.

(2) This UAS must be operated in accordance with applicable air traffic and general operating rules of part 91 and all additional limitations herein prescribed under the provisions of § 91.319(i), Aircraft having experimental certificates: Operating limitations.

(3) Defense Technologies, Inc., must accumulate at least 50 flight hours under its experimental airworthiness certificate before the aircraft can be used for market surveys, sales demonstrations, and customer crew training in accordance with § 21.195(d).

d. UA condition. The UA PIC must determine that the UA is in a condition for safe operation and in a configuration appropriate for the purpose of the intended flight.

e. Multiple-purpose operations. When changing between operating purposes of a multiple purpose certificate, the operator must determine that the aircraft is in a condition for safe operation and appropriate for the purpose intended. A record entry will be made by an appropriately rated person (that is, an individual authorized by the applicant and acceptable to the FAA) to document that finding in the maintenance records.

f. Operation exceptions. No person may operate this UA to carry property for compensation or hire (§ 91.319(a)(2)).

g. UA markings.

(1) This UA must be marked with its U.S. registration number in accordance with part 45 or alternative marking approval issued by the FAA Production and Airworthiness Division, AIR-200.

(2) This UA must display the word *Experimental* in accordance with § 45.23(b), Display of marks, unless otherwise granted an exemption from this requirement.

h. Required documentation. Before conducting the initial flight of the Kestrel – T, Defense Technologies, Inc., must forward a copy of the Kestrel – T, program letter, special airworthiness certificate, and operating limitations to the following personnel:

(1) Lynda Otting, FAA Air Traffic Representative, Eastern Service Center, System Support, 1701 Columbia Ave, College Park, GA 30337, telephone (404) 305-5577, email lynda.g.otting@faa.gov.

(2) Richard Posey, Aviation Safety Inspector, Production and Airworthiness Division, AIR-200, 800 Independence Ave, SW, Washington, DC 20591, telephone (202) 267-9538, email richard.posey@faa.gov.

i. Change in registrant address. Section 47.45, Change of address, requires that the FAA Aircraft Registry be notified within 30 days of any change in the aircraft registrant's address. Such notification is to be made by providing AC Form 8050-1, Aircraft Registration Application, to the FAA Aircraft Registration Branch (AFS-750) in Oklahoma City, Oklahoma.

j. Certificate display and manual availability. The airworthiness and registration certificates must be displayed, and the aircraft flight manual must be available to the pilot, as prescribed by the applicable sections of 14 CFR, or as prescribed by an exemption granted in accordance with 14 CFR part 11, Investigative and Enforcement Procedures, to Defense Technologies, Inc.

2. Program Letter. The Kestrel – T, program letter, dated 6/10/2008, will be used as a basis for determining the operating limitations prescribed in this document. All flight operations must be conducted in accordance with the provisions of this document.

3. Initial Flight Testing.

a. Requirements. Flight operations must be conducted within visual line of sight of the pilot/observer. Initial flight testing shall be considered completed upon accumulation of a minimum of 25 flight hours. Following satisfactory completion of initial flight testing, the operations manager or chief pilot must certify in the records that the aircraft has been shown to comply with § 91.319(b). Compliance with § 91.319(b) must be recorded in the aircraft records with the following, or a similarly worded, statement:

I certify that the prescribed flight test hours have been completed and the aircraft is controllable throughout its normal range of speeds and throughout all maneuvers to be executed, has no hazardous operating characteristics or design features, and is safe for operation. The following aircraft operating data has been demonstrated during the flight testing: speeds Vx _____, and Vy _____, and the weight _____ and CG location _____ at which they were obtained.

b. Aircraft operations for the purpose of market surveys, sales demonstrations, and customer crew training. These operations cannot be performed until 50 flight

hours have been accomplished. An entry in the maintenance records is required as evidence of compliance.

4. Authorized Flight Operations Area.

a. **Description of the authorized flight operations area.** The flight operations area is located in Clements, MD. Clements Field, 4MD4 is a private airport located at:

Latitude 38° 20.408N
Longitude 76° 44.432W

b. **Flight test area.** The flight operations area authorized for the UA will be referred to as the flight test area, and is depicted graphically below.

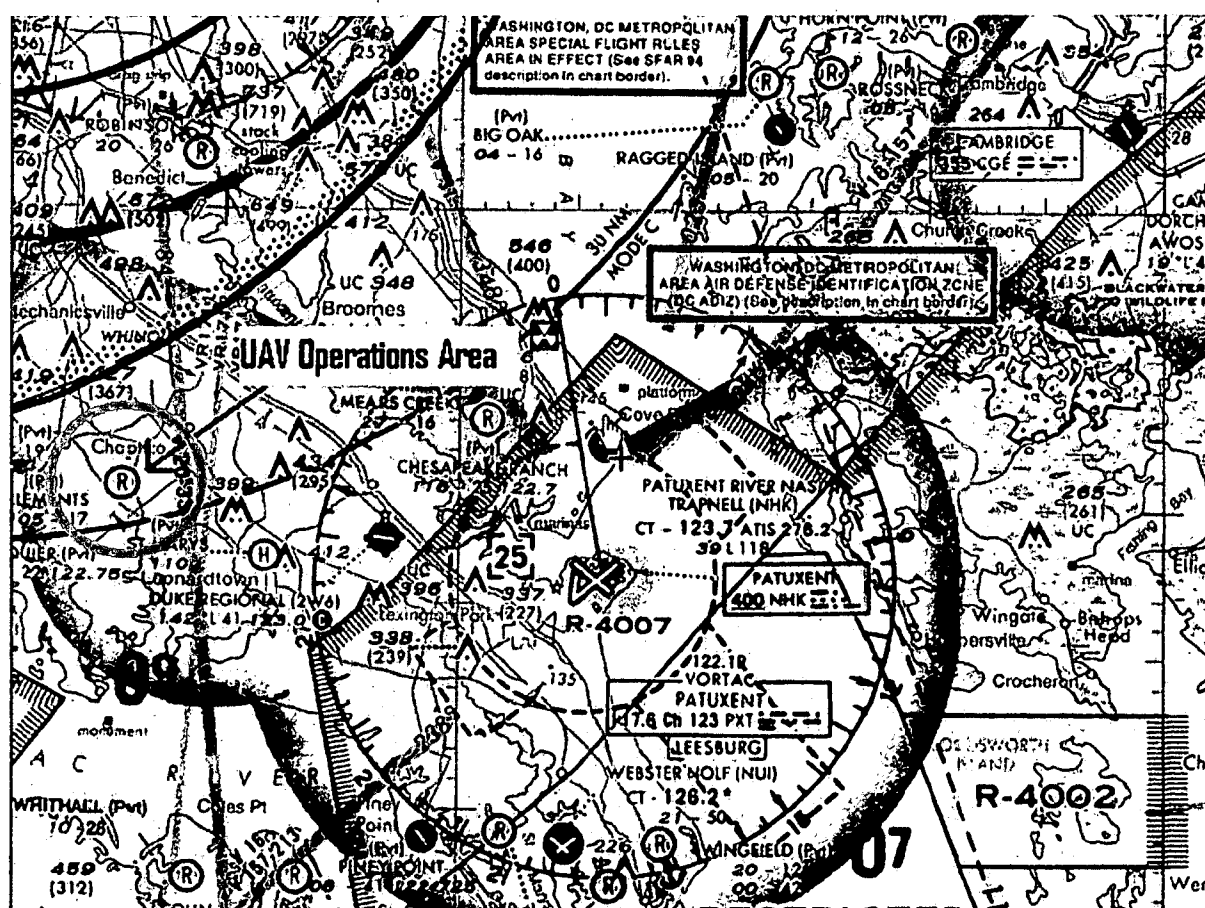


Figure 1. Aeronautical Chart

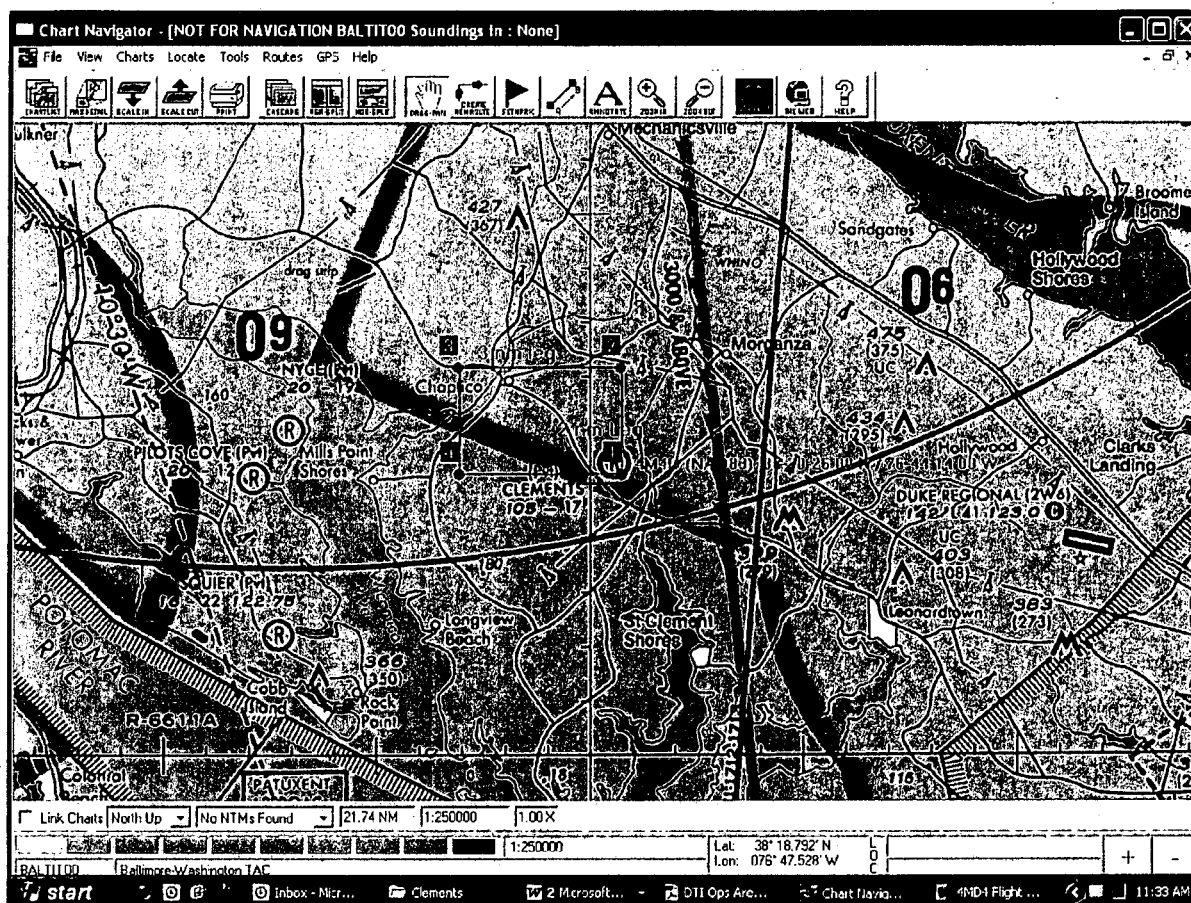


Figure 2. Kestrel – T Flight Test Area

Waypoints Kestrel-T Experimental Flight Box - 4MD4 Operations		
Point Name	Latitude	Longitude
Point 1	38° 20.148' N	076° 44.241' W
Point 2	38° 22.138' N	076° 44.263' W
Point 3	38° 22.145' N	076° 48.098' W
Point 4	38° 20.156' N	076° 48.074' W

c. Authorized flight times and conditions. All flight operations must be conducted during daylight hours under visual flight rules (VFR). VHF/UHF monitoring or communication with Potomac TRACN (PCT) is not required. The following conditions are included in your operating limitations:

- (1) Operations shall be conducted below 1000 ft AGL.
- (2) Operations shall be contained in an area west and north of 4MD4, not to exceed 1nm north and 1nm west of the airport and must remain clear of the ADIZ.
- (3) The UAS PIC must notify the PCT TRACON Operations Manager

at phone (540) 349-7541 at least 30 minutes prior to launch and immediately upon termination of operations each day. DTI must provide PCT with an on-site contact name and phone number for two-way communications with ATC for each flight.

(4) The Kestrel UAS shall transmit the assigned beacon code 0377 and altitude information (Mode-C) for the duration of the flight. Any failure of the transponder or inability to properly squawk the assigned code shall be reported to PCT and flight operations shall be terminated.

(5) The Kestrel pilot shall have the capability of maneuvering the UAS or suspending operations as instructed by PCT.

(6) A Notice to Airmen (NOTAM) shall be issued when UAS operations are being conducted. (Note: Do not use 'distant' or D here as the NOTAM classification and codes have recently been changed.) DTI shall contact the Automated Flight Service Station (FSS) no less than 48 hours prior to the operation and provide:

- i) Name, address, and telephone number of the person giving notice.
- ii) Nature of the activity.
- iii) Date, time, and duration of the activity.
- iv) Size of the affected area in nautical mile radius and affected altitudes.
- v) Location of center of affected area in relation to airport.
- vi) Location of center of affected area in relation to nearest VOR/DME or VORTAC.

(7) Fuel quantity shall be limited to that necessary for one (1) hour flight time and a 30 minute reserve.

d. Criteria for remaining in the flight test area. The UAS PIC must ensure all UA flight operations remain within the lateral and vertical boundaries of the flight test area. Furthermore, the UAS PIC must take into account all factors that may affect the capability of the UA to remain within the flight test area. This includes, but is not limited to, considerations for wind, gross weight, and glide distances.

e. Incident/accident reporting. Any incident/accident and any flight operation that transgresses the lateral or vertical boundaries of the flight test area or any restricted airspace must be reported to the FAA within 24 hours. This information must be reported to the Unmanned Aircraft Program Office, AIR-160. AIR-160 can be reached by telephone at 202-385-4636 and fax at 202-385-4651. Accidents must be reported to the National Transportation Safety Board (NTSB) per instructions contained on the NTSB Web site: www.nts.gov. Further flight operations must not be conducted until the accident/incident is reviewed by AIR-160 and authorization to resume operations is provided to Defense Technologies, Inc.

5. UA Pilots and Observers.

a. UA PIC roles and responsibilities.

- (1) The UA PIC must perform crew duties for only one UA at a time.
- (2) All flight operations must have a designated UA PIC. The UA PIC has responsibility over each flight conducted and is accountable for the UA flight operation.
- (3) The UA PIC is responsible for the safety of the UA as well as persons and property along the UA flight path. This includes, but is not limited to, collision avoidance and the safety of persons and property in the air and on the ground.
- (4) The UA PIC must avoid densely populated areas (§ 91.319) and exercise increased vigilance when operating within or in the vicinity of published airway boundaries.
- (5) The UA will not be flown beyond one (1) nm/line-of-sight of the external pilot.

b. UA PIC certification and ratings requirements.

- (1) The UA PIC must hold and be in possession of, at a minimum, an FAA private pilot certificate, with an airplane, rotorcraft, or powered-lift category; and single- or multiengine class ratings appropriate to the type of UA being operated.
- (2) The UA PIC must have and be in possession of a valid third-class (or higher) airman medical certificate issued under 14 CFR part 67, Medical Standards and Certification. A valid second-class airman medical certificate is required after 9/10/2008.

c. UA PIC currency, flight review, and training.

- (1) No person may act as pilot in command of an unmanned aircraft unless that person has made at least three takeoffs and three landings in manned aircraft within the preceding 90 days acting as the sole manipulator of the flight controls.
- (2) The UA PIC must have a flight review in manned aircraft every 24 calendar months in accordance with § 61.56, Flight review.
- (3) The UA PIC must maintain currency in unmanned aircraft in accordance with Defense Technologies, Inc., procedure: DTI UAS Biennial Flight Review V 1.0, DTI-UAS-BFR-01.
- (4) The UA PIC must have a flight review in unmanned aircraft every 24 calendar months in accordance with Defense Technologies, Inc., procedures.

(5) All UA PICs must have successfully completed applicable Defense Technologies, Inc., procedure, DTI UAS Pilot Training DTI-UAS-PIL-TRA-SYL-01 training for the UAS.

d. Supplemental UA pilot roles and responsibilities.

(1) Any additional UA pilot(s) assigned to a crew station during UA flight operations will be considered a supplemental UA pilot.

(2) A supplemental UA pilot assists the PIC in the operation of the UA and may do so at the same or a different control station as the PIC. The UA PIC will have operational override capability over any supplemental UA pilots, regardless of position.

(3) A supplemental UA pilot must perform crew duties for only one UA at a time.

e. Supplemental UA pilot certification. The supplemental UA PIC need not be a certificated pilot, but must have successfully completed a recognized private pilot ground school program.

f. Supplemental UA pilot currency, flight review, and training.

(1) All UA pilots must maintain currency in unmanned aircraft in accordance with DTI UAS Pilot Training DTI-UAS-PIL-TRA-SYL-01.

(2) All UA pilots must have a flight review in unmanned aircraft every 24 calendar months in accordance with Defense Technologies, Inc., procedures.

(3) All UA pilots must have successfully completed Defense Technologies, Inc., training in accordance with DTI UAS Pilot Training DTI-UAS-PIL-TRA-SYL-01.

g. Observer roles and responsibilities. The task of the observer is to provide the UA PIC(s) with instructions to maneuver the UA clear of any potential collision with other traffic. To satisfy these requirements—

(1) The observer must perform crew duties for only one UA at a time.

(2) At no time will the observer permit the UA to operate beyond the line-of-sight necessary to ensure maneuvering information can be reliably determined.

(3) At no time will the observer conduct his/her duties more than 1 nm laterally and 1000 ft vertically from the UA.

(4) An observer must maintain continuous visual contact with the UA to discern UA attitude and trajectory in relation to conflicting traffic.

(5) Observers must continually scan the airspace for other aircraft that pose a potential conflict.

(6) All flight operations conducted in the flight test area must have an observer to perform traffic avoidance and visual observation to fulfill the see-and-avoid requirement of § 91.113, Right-of-way rules: Except water operations.

h. Observer certification.

(1) All observers must either hold, at a minimum, an FAA private pilot license or must have successfully completed specific observer training acceptable to the FAA. An observer does not require currency as a pilot.

(2) All observers must have in their possession a valid third-class (or higher) airman medical certificate issued under part 67. A valid second-class airman medical certificate is required after 9/10/2008.

i. Observer training.

(1) All observers must be thoroughly trained, be familiar with, and possess operational experience with the equipment being used. Such training is necessary for observation and detection of other aircraft for collision avoidance purposes as outlined in Defense Technologies, Inc., program letter.

(2) All observers must have successfully completed applicable Defense Technologies, Inc., training in accordance with DTI UAS Observer Training Manual V 1.1, DTI-UAS-ODS-TNG-MAN-02.

6. Equipage.

a. The UAS must be equipped with an operable transponder with Mode C and two-way communications equipment allowing communications between the UA pilot, observers, all UAS control stations.

b. The UA must be equipped with operable strobe/anti-collision lights. Strobe/anti-collision lights must be illuminated during all operations.

7. Communications.

a. Before UA flights. Before conducting operations, the frequency spectrum used for operation and control of the UA must be approved by the Federal Communications Commission or other appropriate government oversight agency.

b. During UA flights.

(1) Appropriate air traffic frequencies must be monitored during flight operations.

(2) All crew members must maintain two-way communications with each other during all operations. If unable to maintain two-way communication, the UA PIC will expeditiously return the UA to its base of operations while remaining within the flight test area and conclude the flight operation.

8. Flight Conditions.

a. Daylight operations. All flight operations must be conducted during daylight hours in visual meteorological conditions (VMC), including cloud clearance minimums as specified in § 91.155, Basic VFR weather minimums. Flight operation in instrument meteorological conditions (IMC) is not permitted.

b. Prohibitions.

(1) The UA is prohibited from aerobatic flight, that is, an intentional maneuver involving an abrupt change in the UA's attitude, an abnormal acceleration, or other flight action not necessary for normal flight. (See § 91.303, Aerobatic flight.) If aerobatic flight is anticipated, it must be thoroughly discussed during the system review and be appropriately described in the operating limitations.

(2) Flight operations must not involve carrying hazardous material or the dropping of any objects or external stores.

(3) Each UA must be operated by only one control station at a time. A control station may not be used to operate multiple UAS.

c. Transponder requirements. The UA must operate an approved operational Mode C altitude encoding transponder during all flight operations.

d. Transponder failure. In the event of transponder failure, the UA must conclude all flight operations and expeditiously return to its base of operations within the prescribed limitations of this authorization.

9. Flight Termination and Lost Link Procedures.

a. Flight termination. In accordance with Defense Technologies, Inc., program letter, dated 6/10/2008, flight termination must be initiated at any point that safe operation of the UA cannot be maintained or if hazard to persons or property is imminent.

b. Lost link procedures. In the event of lost link, the UA must provide a means of automatic recovery that ensures airborne operations are predictable and that the UA remains within the flight test area. All flight crew members and the appropriate ATC facility will be immediately notified of the lost link condition and the expected UA response.

10. Maintenance and Inspection.

a. General requirements. The UAS must not be operated unless it is inspected and maintained in accordance with the Defense Technologies, Inc., Kestrel - T UAS Maintenance and Inspection Policy, DTI-UAS-MAIN-INSP-01 accepted by Washington Flight Standards District Office (FSDO)-27 on 6/10/08, or later FAA-accepted revision. Defense Technologies, Inc., must establish and maintain aircraft maintenance records (see paragraph 10(d) below).

b. Inspections. No person may operate this UAS unless within the preceding 12 calendar months it has had a condition inspection performed according to the FAA-accepted Defense Technologies, Inc., Kestrel - T UAS Maintenance and Inspection Policy, DTI-UAS-MAIN-INSP-01. The UAS must also have been found to be in a condition for safe operation. This inspection will be recorded in the UAS maintenance records as described in paragraph 10(d) below.

c. Authorized inspectors. Only those individuals trained and authorized by Defense Technologies, Inc., and acceptable to the FAA may perform the inspections and maintenance required by these operating limitations.

d. Maintenance and inspection records. Maintenance and inspections of the UAS must be recorded in the UAS maintenance records. The following information must be recorded:

(1) Maintenance record entries must include a description of the work performed, the date of completion for the work, the UAS's total time-in-service, and the name and signature of the person performing the work.

(2) Inspection entries must contain the following, or a similarly worded, statement:
I certify that this UAS was inspected on (date), in accordance with the scope and detail of the Defense Technologies, Inc., Defense Technologies, Inc., Kestrel - T UAS Maintenance and Inspection Policy, DTI-UAS-MAIN-INSP-01, and was found to be in a condition for safe operation.

(3) UAS instruments and equipment required to be installed must be inspected and maintained in accordance with the requirements of the Defense Technologies, Inc., Kestrel - T UAS Maintenance and Inspection Policy, DTI-UAS-MAIN-INSP-01. Any maintenance or inspection of this equipment must be recorded in the UAS maintenance records.

(4) No person may operate this UAS unless the altimeter system and transponder have been tested within the preceding 24 calendar months in accordance with § 91.413, ATC transponder tests and inspections. These inspections will be recorded in the UAS maintenance records.

11. Information Reporting. Defense Technologies, Inc., will provide the following information to Donald.E.Grampp@FAA.GOV on a monthly basis. A copy of the report shall be provided to AIR-200.

- a. Number of flights conducted under this certificate.
- b. Pilot duty time per flight.
- c. Unusual equipment malfunctions (hardware or software).
- d. Deviations from ATC instructions.
- e. Unintended entry into lost link flight mode that results in a course change.

12. Revisions and Other Provisions.

a. Experimental certificates, program letters, and operating limitations. The experimental certificate, FAA-accepted Defense Technologies, Inc., program letter, and operating limitations cannot be reissued, renewed, or revised without application being made to the New Cumberland Manufacturing Inspection District Office, in coordination with AIR-200. AIR-200 will be responsible for FAA Headquarters internal coordination with the Aircraft Certification Service, Flight Standards Service, Air Traffic Organization, Office of the Chief Council, and Office of Rulemaking.

b. Certificates of waiver or authorization. No Certificate of Waiver or Authorization (COA) may be issued in association with this experimental certificate unless coordinated with AIR-200.

c. Amendments and cancellations. The provisions and limitations annotated in this operational approval may be amended or cancelled at any time as deemed necessary by the FAA.

d. Reviews of revisions. All revisions to Defense Technologies, Inc., FAA-accepted Defense Technologies, Inc., Kestrel - T UAS Maintenance and Inspection Policy, DTI-UAS-MAIN-INSP-01 must be reviewed and accepted by the Washington FSDO-27. The Washington FSDO can be reached at telephone number (703) 230-7664.

13. UAS Modifications.

a. Software and system changes. All software and system changes will be documented as part of the normal maintenance procedures and will be available for inspection. All software and system changes must be inspected and approved per Defense Technologies, Inc., Defense Technologies, Inc., Kestrel - T UAS Maintenance and Inspection Policy, DTI-UAS-MAIN-INSP-01. All software changes to the aircraft and control station are categorized as major changes, and must be provided in summary form at the time they are incorporated.

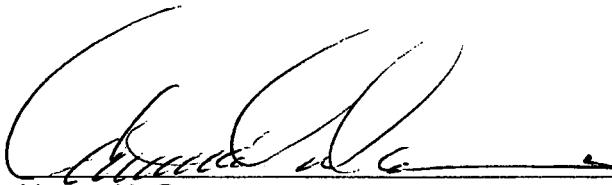
b. Major modifications. All major modifications, whether performed under the experimental certificate, COA, or other authorizations, that could potentially affect the safe operation of the system, must be documented and provided to the FAA before operating the aircraft under this certificate. Major modifications incorporated under COA or other

authorization need to be provided only if the aircraft is flown under these authorizations during the effective period of the experimental certificate.

c. Submission of modifications. All information requested must be provided to AIR-200.

End of Limitations

6/10/2008

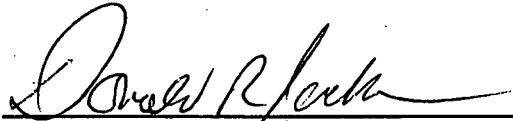


Henry K. Cooper
Senior Aviation Safety Inspector
New Cumberland Manufacturing Inspection District Office
Bldg. 201, Rm. 102,
400 Airport Road
New Cumberland, PA 17070-3419

JUNE 10, 2008

Issuance Date:

I certify that I have read and understand the operating limitations and conditions that are a part of the special airworthiness certificate, FAA Form 8130-7, issued on 6/10/2008, for the purposes of research and development, market survey, and/or crew training. This special airworthiness certificate is issued for Kestrel – T, serial number 003, registration number N2554V.



Applicant (signature)

6-10-2008

Date:

Name (Printed): Donald Jackson

Title: Senior Vice President

Company: Defense Technologies, Inc.

